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(SEE PAGE VIII)

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California State Journal of Medicine.

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IMPORTANT NOTICE!

All Scientific Papers submitted for Publication must be Typewritten.

Notify the office promptly of any change of address, in order that mailing list and addresses in the Register may be corrected.

VOL. XIV JULY, 1916 No. 7

EDITORIAL NOTES

IMPORTANT NOTICES Read Them Carefully!

MALPRACTICE DEFENSE.

As all our members know, the State Medical Society has been defending its members in suits brought for damages for alleged malpractice, subject to certain rules and regulations, since July 1, 1909. Before referring to the recently approved extension of the work, it may be well to set forth here briefly the rules and regulations covering the operation of the present work.

1. The physician defendent must have been a member in good standing, dues fully paid, at the time of the alleged malpractice, and also at the time when the suit is filed against him.

2. Any member sued, or threatened with suit, must, within 48 hours, notify the Secretary of the State Society, forwarding any communications, summons and complaint, or correct copy thereof, with a full statement of the case.

3. If such member is also insured in an indemnity company, he must elect whether to have the company or this Society take charge of his defense; and he must be advised by the Secretary of the Society that if he does not immediately notify the insurance company, he violates his contract with the company and practically cancels his policy, in which event, if a judgment went against him, the company would not be compelled to pay it.

4. An action in the nature of a cross complaint, brought against a member who has sued a patient to collect an account due within one year from the termination of the services, will not be defended by the Society, unless such member has, before suing his patient, applied to the Council of the State Society for, and received, permission to bring such suit.

5. The Society will not defend a member in an action originating in the treatment of some injury where an X-ray plate would have been of benefit and advantage in making a correct diagnosis, or in correctly treating the patient, and was not so taken, unless the member so sued can furnish the Council with a full and satisfactory explanation of why an X-ray plate was not made and kept by him.

All of these rules are comparatively simple and all of them have been approved by the House of Delegates of the State Society.

In any case where a member is being defended by an insurance company, and in which we feel that it will be desirable to have our own attorneys participate in such defense, we so participate. The Society makes sure that everything which should be done for the protection of its members, has been and is being done.

PAYING JUDGMENTS.

When the medical defense plan was adopted, the Society decided not to include the settlement of judgments which might go against members. As a result of this decision, quite a good many members, who felt that they might at some time or other have a judgment against them, have carried indemnity insurance with one or more insurance companies. Such a policy with an insurance company costs from $15 to $30 a year.

The House of Delegates, at the Fresno meeting, requested the Council to arrange a plan by which the members who desire to do so could contribute to a fund out of which charges of this kind against such members could be paid. This has been done, and the plan, as outlined and approved by the Council, and prepared by its attorneys, is published herewith. (See infra.)

SAFETY AT REASONABLE COST.

It will be seen from the plan presented under the heading "Malpractice Indemnity Fund," that any or all of our members may thoroughly protect themselves against possible judgments at a cost very much less than the amount paid to an insurance company. Even if there were a great many judgments, and even if the amount of them required a payment to the fund of $15.00 as frequently as every other year, there would be a saving of at least 50% to each member participating in this enterprise. It is probable that if between 500 and 1000 members will take advantage of this offer, they will not have to pay an assessment more often than, at the most, once in five years, though of course this is merely surmise.

The reason why a promissory note for $15.00, made payable one year after date, is required, is that the fund may be assured of the two successive years' contribution by every member participating, and thus avoid the difficulties and complications which would arise by a member paying one year and not the second.

ACT QUICKLY.

You will note that this indemnity fund plan requires that at least 300 members shall have contributed before the end of the year. If they have not so contributed, the money and notes will be returned to those who have, and the plan will be abandoned. Therefore, if you wish this additional protection, act quickly! Send in your remittance for $15.00 and your note, payable one year after date, for $15.00.

The plan is so good, so practical, and so thoroughly sound in its buisness features, that it would seem to be a shame not to take advantage of it. Every surgeon, and particularly men doing hospital or dispensary work, and every specialist doing such work, should immediately enroll himself as a participant in this fund.

NOT ONLY SURGEONS.

A good many men in general practice have the idea that only surgeons, or almost exclusively surgeons, are subject to suits for damages for alleged malpractice, for the reason that such suits—in their opinion—always originate out of fractures or similar injuries. This is not the case. Some of the worst suits that we have had in the past, and have now on hand to defend, have been suits brought against physician members in the ordinary course of general practice, confinement work and the like. One bitterly-fought suit had its origin in the question of correct diagnosis of tuberculosis. Another one, lasting two weeks or more in trial, originated in a confinement case. Still another had its origin in the examination of school pupils. There is no limit to the possible range of conditions or treatments out of which a suit for damages may arise.

A BUSINESS PROPOSITION.

Remember that the business side of the work of the State Society has now attained remarkable proportions; nearly all of the work passing through the office of the Society is business of a non-medical character.

The creation and carrying forward of this "Malpractice Indemnity Fund" will still further increase the business of the Society, and it must be conducted in a businesslike way. It is an absolutely practical business proposition; it can be handled, and it will be handled, in a practical business way. Any member can absolutely assure himself of complete protection (including settlements, paying judgments, etc.) at a cost which will probably range from $3.00 to $7.00 a year on an average, depending upon the amount of expense and the frequency with which assessments will have to be made in order to keep up the fund.

In discussing this plan with the manager of a very large insurance company, he commented upon the absolute soundness of the proposition from a business point of view, and said that if the members did not take advantage of it, "they would be fools."

THE OPPORTUNITY IS YOURS.

Here is the plan by which you may thoroughly and absolutely protect yourself. Study it carefully. Think about it seriously. In the long run you will save a considerable amount of money. If you wish to save that money, enroll your name at once and send in your remittance, and participate in the benefit of the

MALPRACTICE INDEMNITY FUND.

The House of Delegates of the Medical Society of the State of California, at its 45th annual session, Fresno, California, April 19, 1916, passed a resolution requesting the Council of the Medical Society of the State of California to take proper and appropriate action to the end that means may be provided whereby members of the Medical Society of the State of California who desire to do so may voluntarily contribute to a fund, out of which fund shall be paid the amount of judgments assessed against such contributing members in any suit or suits against such contributing members for damages for alleged malpractice, and also payment of such sums as may be necessary for the settlement of claims against such contributing members when in the judgment of competent and experienced attorneys, by and with the concurrence of the attorneys for the Medical Society of the State of California and by and with the consent and concurrence of such contributing member, it seems wise and expedient to settle such claim or claims and the necessary expenses connected therewith.

The Council, having considered this matter, and having referred the same to its attorneys who have considered, amended and revised this statement or plan of conduct of this undertaking, presents the following detailed plan for the conduct and operation of this indemnity fund:

1. Unless within six months from July 1, 1916 (on or before December 31, 1916), not less than three hundred (300) members shall have contributed in the manner provided hereafter to this fund, known as the Malpractice Indemnity Fund, the whole plan and operation of this enterprise shall cease, terminate, be abandoned and the amounts which may have been contributed during that period shall be returned to the contributors.

2. The Council will appoint three trustees of this fund who shall see that it is kept separate from all other funds of the Society and that it is safely invested and administered, which trustees shall be responsible to the Council of the Medical Society of the State of California and to the contributors to the fund.

3. Any member desiring to participate in the creation of this fund and in the benefits to be derived therefrom, subject to the terms and conditions of this plan, shall transmit to the Secretary of the Medical Society of the State of California, who in turn shall pay over the sum to the trustees of the fund herein above referred to, the sum of Fifteen ($15.00) Dollars and a promissory note payable one year after date, without interest, to the order of the Medical Society of the State of California

in the sum of Fifteen ($15.00) Dollars, which note shall be presented for collection on maturity and shall upon collection be credited to the account of the drawer of the note as his payment for the second year toward the creation of such Malpractice Indemnity Fund. In the event that not more than three hundred (300) members shall so contribute by paying Fifteen ($15.00) Dollars and transmitting with such payment a promissory note as herein indicated before December 31, 1916, such sum of Fifteen ($15.00) Dollars and such promissory note shall forthwith be returned to such contributing member.

All payments out of the Malpractice Indemnity Fund shall be made by check signed by a majority of the three trustees of the fund upon presentation to them of a bill of costs for judgment, the amount of compromise settlement or the like, which bill shall have been duly prepared by the attorneys of the Medical Society of the State of California and signed by them with the statement that it is correct as to amount and desirability.

4. Any questions which may arise in the course of the administration of this undertaking shall be settled by the Council except as hereinbefore stated, namely, the charge and administration of the fund and the payments therefrom, and further as to any use of such fund or funds other than for the purposes hereinbefore stated.

5. The Malpractice Indemnity Fund herein referred to may be divided and distributed to the living contributors thereto at any time upon the consent thereto in writing of two-thirds of the living contributors to the fund. The fund shall not be diverted from the purposes specified or disposed of in any other way except upon similar action, namely, the consent in writing of two-thirds of the living contributors.

6. Any member contributing to this fund who shall cease to be a member of the Medical Society of the State of California for any reason shall thereby lose and forfeit all of his interest whatsoever in this fund. Any interest which any contributing member possesses in this fund is inherent in himself personally and may not be transferred, assigned, or disposed of in any way save by his termination of membership in the Medical Society of the State of California as hereinbefore provided.

7. If and when the Malpractice Indemnity Fund shall by virtue of payments made therefrom be reduced to an amount considered by the Council of the Medical Society of the State of California to be an unsafe amount, the said Council may then levy upon the contributing members a further assessment of not less than Fifteen ($15.00) Dollars a year for one or two years, as in their judgment may seem proper, which assessment shall be payable in the same manner as the original payments.

8. Any member at any time in future during the existence of the Malpractice Indemnity Fund, as herein described, may contribute to the fund as provided for herein and upon such additional terms as the Council may prescribe and thereby receive the benefits to be derived from such participation.

9. Save and except as to the distribution of the fund or its diversion to some other purpose, the Council may make any changes or alterations in these rules, or may adopt such other and different rules and regulations as it may deem proper, necessary and appropriate.

THE VALUE OF A MEDICAL LICENSE IN CALIFORNIA.

From time to time the JOURNAL will publish illustrating examples of the satisfactory way in which the present medical law and its administration are admitting to practice in this State persons with little or no qualification. We have already given one or two such instances, and here is another. Dr. "John Doe" was licensed by the present Board of Medical Examiners April 29, 1915. His previous record is as follows: He took the examination in December, 1909, and received a mark of 42.9%, in addition to which he was caught cheating. He took the examination August 23, 1909, and failed with a mark of 58.1%. Later he went to Oregon and obtained a license, and in 1913 applied for reciprocity license in this State, and was refused. In 1914, he again took the examination, and failed with a mark of 58.1%. Subsequently his papers of the examination in 1914 were reviewed, he was raised two points in one or two subjects, and then allowed 1% a year for 12 years practice, and was given a license to practice in California. The Board is to be congratulated upon its efficient protection of our citizens!

THE HARRISON NARCOTIC LAW.

In the first place, let it be said that the purpose and intent of the law are beyond all question of the greatest benefit to society, to physicians, and to persons who come to physicians as patients. There are, however, numerous things about it that are vexatious. Some of the rules made are absurd, and it would be practically impossible for any physician actively to practice his profession and not violate some of these rules and regulations. For instance, in the matter of absurdity, treasury decision 2213 learnedly lays down the rule that a physician's prescription, when made up, is a preparation and not a remedy. One is reminded of many wise questions that have been propounded; as, for instance, "Why is a red hot stove?" It is also somewhat annoying to see incompetent and unfitted persons on the payroll of the Government making silly and bothersome rules of this kind, and at the same time read from the court report in a newspaper that a man running a regular business in selling narcotics to drug fiends, when arrested, was penalized only to the extent of 30 days in the county jail. Physicians as a class are doing a great deal, by conforming willingly to the Harrison Law, toward the end of suppressing the habit-forming drug evil. However, if society wishes to rid itself of this pest, it will have to cooperate with physicians in future more than it has in the past.

HEALTH EFFICIENCY.

Elsewhere in the JOURNAL will be found a report of the physical examinations of 1495 men employed by the Weed Lumber Company. Other companies are pursuing the same policy of having all their employees given a thorough physical examination, and the result has been remarkable in many ways. In the first place, a considerable number of abnormal conditions are found and recorded which prevents the laborer at some time in the future claiming that such abnormality was due to accident. For instance, out of the 1495 men covered by this report, it is seen that 37% had hernia, and that 46% had some trouble with their eyes, twenty being blind in one eye and 77 having very poor vision in both eyes.

CORRECTION.

Through a mistake in the JOURNAL office, the proof of the advertisement of W. B. Saunders Company, appearing in the June issue of the JOURNAL, was not forwarded in time for certain corrections to be made. Graves' Gynecology was the book advertised, and the price should have been stated: cloth $7.00 net, half morocco $8.50 net.

HEALTH INSURANCE.

The medical aspect of health insurance will soon attain the same importance here that it has already attained in New York, where a health insurance bill was presented to the legislature of the past winter. There, the bill introduced without hope of passage the first year, did not contain detailed provisions for the administration of medical care under health insurance. In the two months following the public hearing on the bill the American Association for Labor Legislation has been giving earnest consideration to the medical aspect, and now, upon the basis of suggestions put forward by representative doctors, it has drafted provisions for the organization of medical benefit.

These sections provide in brief that the insurance carriers, subject to the approval of the state social insurance commission, may select the method of administration most suited to local conditions, through either a panel of doctors to which all legally qualified physicians may belong, and from among whom the insured patients shall have free choice of physician; or through salaried physicians, with reasonable free choice; or finally through physicians engaged for specified districts. The merits and demerits of various bases of payments are carefully considered in the explanatory material accompanying the bill, although the bill itself does not yet contain provisions to this effect. Representation of the medical point of view is gained through a physician member of the state supervisory commission, through consultation with a medical advisory board, and through local committees. To avoid a repetition of some of the unfavorable foreign experience the maximum number of insured patients whom a physician may treat is specified. This will prevent an undue concentration of the insured patients among a few physicians, and thus will prevent the abuses which result from an impossibly large insurance practice. This step, admirable in its intentions, might appear arbitrary, if it had not been worked out with the advice and cooperation of the medical profession.

It is upon such points as these, affecting both the character of the insurance practice and the physicians themselves, that consultation between the California Social Insurance Commission and the Medical Society of the State of California will be most valuable.

"SCIENCE"—?

A gentleman named Cyrus L. Topliff, who apparently from his card is connected with the *Scientific American,* has sent in a little circular, possibly a reprint of an item from the *Scientific American,* on the subject of the cancer problem. It is rather interesting, as coming from one apparently connected with the *Scientific American,* to read the following, and in reading it, one cannot but wonder where we are going to land if such extraordinary views proceed from supposedly scientific sources.

> "As the mind is the only power which can overstrain or weaken the nervous system, it is reasonable to suppose that we must first study the action of the mind over the body before we can discover the real fundamental cause of any inflammatory or malignant form of disease.
>
> "Fear and worry are synonymous, and inseparable in a person's mind. Therefore, fear is really the fundamental cause of many diseases, and the various forms of such depend largely on what particularly harmful thoughts are combined with fear in each patient.
>
> "If the medical profession fail to solve this difficult problem, it is possible that some 'layman,' who has given much thought and study to the subject, and experimented on scientific lines, may ultimately succeed in demonstrating the fundamental cause, and if it can be accomplished, then much of the mystery of all diseases will disappear and health and happiness will be much more general than at the present time."

SOCIAL INSURANCE.

Herewith is a brief report of a meeting of the Committee on Social Insurance of the Medical Society of the State of California, held in San Francisco May 20th. Elsewhere in the JOURNAL there will be found some additional matter relating to this most important subject and a copy of the circular of information which was sent to all county society secretaries. A great deal of interest and enthusiasm on this subject seems to have been raised and it is a most fortunate thing that such is the case. The statement of Dr. Lambert, chairman of a similar committee of the American Medical Association, to the effect that in his judgment this is the most momentous and important problem facing the medical profession of the United States, is undoubtedly true, and its truth is

evidenced by a committee of the A. M. A. with an appropriation sufficient to permit it to do whatever is needed in the way of keeping the medical profession in touch with what is going on.

EXPERTS IN OUR MALPRACTICE CASES.

Something over a year ago, a careful review was made of a number of suits brought against our members for damages for alleged malpractice, with the idea of finding out what doctors were testifying as experts for the plaintiff in these various cases. The result is very interesting. As a rule the experts who testify for the plaintiff in malpractice cases need very little consideration on our part, as either ignorance or prejudice is, in almost every instance, so palpable that it is apparent to the jury that the expert does not know what he is talking about, or else that there is personal animus against the defendant physician. This condition of things has developed quite naturally and without any extraneous influence, and is therefore the more fortunate, for the plaintiff is unable to claim inability to obtain experts to testify on his behalf. There would be great danger if the feeling should develop, or build up, that all the doctors in the State or in the Society were leagued together so firmly that no plaintiff could ever get an expert to testify for him. Out of several hundred cases that have passed through this office, we can recall only three or four in which there was any real merit in the plaintiff's claim of negligence. In nearly every suit there is no shadow of ground for the complaint of the plaintiff and therefore we have an absolutely honest defense, and there can be little danger in opening wide the field of expert testimony on behalf of the plaintiff. We have little to fear from perfectly honest experts, and very little more to fear from the ignorance of the expert ordinarily called by the plaintiff, or from one who is biased, as it is generally possible to disclose the bias, and the ignorance is self-evident.

COUNTY SOCIETY ACTIVITY.

Some of the county medical societies, especially in the southern part of the State, have been, and are, very active, and in ways that are distinctly progressive. Last month we commented on the Library Association of the San Diego County Society. San Bernardino County has had a Physicians Club for some years. In Riverside the activities of the County Society have been marked and liberal. Frequently meetings are held in nearby counties, thus securing larger audiences, bringing more men together, and increasing the friendly feeling between different county societies. In April the meeting of the Riverside County Society was held at El Centro in Imperial County, and the physicians of Imperial Valley, San Bernardino County and Riverside County were all invited to attend. An excellent program was prepared and a two-days outing was enjoyed by a large number of members.

COUNTY SOCIETY NOTICES.

June 1, 1916.

To all County Society Secretaries:

Dear Doctor:

Enclosed is some matter from the Committee on Health Insurance which is of the greatest importance to every physician. You should read it carefully and present the gist of it to your Society, and at the same time urge them to follow carefully all that is published on this subject in the STATE JOURNAL from month to month.

The State Society, at the Fresno meeting, authorized the Council to prepare a plan whereby such members as wished to might contribute to a fund for the purpose of paying judgments and the like; in other words, covering such members as fully as any insurance company could do. The full details of this plan and arrangement will appear in the July number of the JOURNAL. Please urge your members to look for this and study it carefully when it comes out.

Cordially yours,

PHILIP MILLS JONES,
Secretary.

To County Societies:

Your attention is herewith called to the following facts:

1. The last legislature authorized, and the Governor has appointed, a Commission to Investigate and Report upon Systems of Social Insurance.
2. This Commission has undertaken an intensive study of sickness insurance, this seeming more practicable for the present than the study of insurance against old age, invalidity, unemployment and death.
3. This Commission will undoubtedly make some report to the legislature in January; i. e., at a period prior to the 1917 meeting of the State Society.
4. It is doubtful whether this Commission will recommend a bill creating sickness insurance at the January meeting of the legislature. It is probable that further time for study will be required.
5. The State Medical Society has been asked by this Commission to appoint a committee to consult with it. This has been done.
6. The State Society's Committee feels that in the study of sickness insurance, it is important that the entire profession take an active part. The legislature will have met before this Committee will have been able to report to the Society at large.
7. It therefore and hereby requests the appointment of a Social Insurance Committee in every county medical society.
8. The State Committee will keep in touch with all county committees, and endeavor to place all available information at their disposal.
9. The work is important. Please appoint your

committee immediately and report at once as to its personnel to the Secretary of the State Society, in the enclosed envelope.

Yours truly,

RENÉ BINE,

Chairman Committee on Health Insurance.

Address: 350 Post Street, San Francisco.

ANOTHER SWINDLER.

A rather clever way of getting a few dollars out of the doctor came to our attention last month, and is worthy of record for reference. A workman appeared in the office of a specialist in San Francisco, with a letter purporting to come from Gordon and Gillis, General Contractors, asking the doctor to take professional care of one of their valued employees, a Mr. Leroy Williams. The patient was carefully examined and was advised that his case would require a somewhat long period of treatment. He asked about what the expense would be and was told; whereupon he stated that he would like to pay something on account, and produced what appeared to be a draft for $85.00, asking the physician to take out $25.00 and give him the rest. This particular doctor, being cautious, told him he would send the check to the bank and the man could come the next day and get his money. It is needless to say that the check was returned by the bank, unpaid, and that the man never showed up again.

NEW VIEWS ON TUBERCULOSIS.

Dr. Maurice Fishberg, a review of whose book on pulmonary tuberculosis will be found elsewhere in the JOURNAL, has presented in a very striking and original way a number of thoughts in regard to tuberculosis that are well worth our careful consideration. The review of his book, already referred to, is extensive, and will give any one interested an excellent idea of its range and scope.

——NOTICE——

The California State Journal of Medicine and the Medical Society State of California Telephones are now

——DOUGLAS 62——

ORIGINAL ARTICLES

SECOND THOUGHTS ABOUT SALVARSAN THERAPY.*

By WILLIAM E. STEVENS, M. D., San Francisco.

As the supply of salvarsan and neosalvarsan has been temporarily discontinued it seems appropriate at this time to consider some of the contraindications for their use and common errors in the technic of the various methods of administration. These preparations, of great value in the treatment of syphilis, contain large amounts of arsenic and are capable of producing some very disastrous and even fatal results when incorrectly employed. This important fact seems to have been lost sight of, for salvarsan has been carelessly, even recklessly, used by many reputable practitioners.

CHOICE OF PREPARATIONS.

Neosalvarsan should be discarded in favor of salvarsan except in those few instances where there are grounds for the belief that an idiosyncrasy exists, or when administration in the office is imperative. The superiority of the latter over the former drug is shown by Nelson and Haines of the Fort Leavenworth, Kansas, Military Prison, who report twice as many negative Wassermann reactions after four injections of salvarsan with mercurial treatment as were obtained after five injections of neosalvarsan and the same amount of mercury. E. H. Martin of Hot Springs, Ark., obtained similar results.

CONTRA-INDICATIONS.

Only positive indications should warrant the employment of this drug. The following cases reported by Brandenburg and Kannengiesser illustrate this fact. A robust man had undergone thorough anti-syphilitic treatment four years previously and although his blood was negative to repeated Wassermann tests, and his wife and children were likewise healthy, he was nevertheless given an intravenous injection of 0.5 grams of salvarsan; vomiting and diarrhea followed immediately and the patient died in convulsions four days later. Kannengiesser's patient was a robust man of 29 who developed convulsions followed by death three hours after salvarsan. No cause was found on autopsy.

Another patient suffered from an enemia for which no cause could be found. Salvarsan was given intravenously in doses of 0.1 and 0.2 grams on consecutive days. Seventy-two hours later paralysis of both arms developed. Recovery followed, but the arms were still weak six months after the treatment.

Davidson of Los Angeles reports the case of a vigorous young man suffering from secondary lues who immediately after the injection of 0.6 of neosalvarsan became cyanosed, pulseless and suffered agonizing pain in the precordium. He recovered some hours later, however, following frequent injections of adrenalin solution and saline enemas. Davidson thought the collapse probably due to the vaso dilation caused by the salvarsan superimposed

* Read before the San Francisco County Medical Society, November 30, 1915.

upon a similar action of alcohol some of which was detected in the patient's vomitus.

The eight deaths in Los Angeles following the intraspinal administration of salvarsan are still fresh in our memory.

These serious results, together with a large number of others reported in the literature, should be sufficient warning against the indiscriminate use of this powerful drug.

In the majority of cases fatalities occur after the second or subsequent doses, the usual symptoms being either those of meningeal involvement, uremia resulting from nephritis, toxemia following degenerative processes in the liver, or pulmonary embolism due to phlebitis and thrombosis at the site of the injection into the vein. This last complication is obviously more likely to result from 606 than from the less irritating 914.

Sachs, Strause and Kaliski give the following list of contraindications for the use of salvarsan: Severe renal involvement; marked cardiac disease with insufficiency of the cardiac muscles; impending coma in diabetes or nephritis; terminal conditions not likely to be benefited by salvarsan and a known intolerance to the drug. To this list may be added, severe gastro-intestinal or hepatic diseases and advanced cancer.

Likewise during pregnancy if there is any doubt as to the condition of the kidneys, functional tests should be made to decide the question. Phenolsulphonephthalein or phloridzin as tests of excretion and blood cryoscopy or blood urea as tests of retention, are of most value.

Salvarsan should be used with great caution when there is involvement of nerve tissue, especially if severe headache exists or symptoms of upper cervical cord or medulla involvement are present. Also in cases of chronic poisoning from alcohol, nicotine, or lead, in tuberculosis or other infectious diseases, in Addison's disease, status lymphaticus and in fact whenever the vitality is lowered from any cause.

IMPROPER PREPARATION OF THE SOLUTION.

Four cases may be mentioned in which the sodium hydrate was unintentionally omitted in making up the salvarsan solution. The first occured in my own practice, the patient being a woman 38 years old who had been infected by her husband twelve years previously. When the secondary symptoms appeared she was informed that she was suffering from Cuban itch, and no specific treatment was given. Three months before coming under my care she began to experience a slight numbness of the legs with some difficulty in walking. Examination revealed an absence of the patellar reflexes with a slight loss of tactile sensation on the outer surfaces of both legs. Her blood Wassermann was three plus positive. The spinal fluid Wassermann, globulin and cell count were negative and except for a diminished amount of hemoglobin (sixty per cent.) and a reduction in the number of red blood cells (3,900,000), she was otherwise healthy. She was given intravenously 0.4 grams of salvarsan in 100 cc. of warm sterile distilled water from which the sodium hydrate solution was omitted. A slight erythema developed and five minutes later upon attempting to rise from the table she lost consciousness; she recovered almost immediately, however, but was very weak for three days.

The second case occurred in the practice of a colleague. The patient was a married woman 17 years of age, in whom a diagnosis of lues had been made although no Wassermann examination had been obtained. She was given intravenously 0.6 grams of salvarsan in 200 cc. of cold non-alkaline solution. Almost immediately she became unconscious and remained so for about twelve hours. Her temperature rose to 104°, sugar appeared in the urine, also a trace of albumen; her ankles became swollen, and for several days she complained of intense pain in the head and back, but eventually recovered.

A third case, seen in consultation by a colleague, developed a profuse erythema following the injection. This cleared up, however, in about five minutes. Further history of the case was not obtained.

The only report of a similar accident that I have been able to discover in the literature is that of Eberly of Fort Wayne, Ind. His patient received 5 cc. of an unneutralized solution containing 0.6 grams of salvarsan in 10 cc. of water. Pronounced symptoms of collapse appeared almost instantly, but were relieved by frequently repeated doses of nitroglycerine. A complete suppression of urine lasted three days. A severe phlebitis began in the cephalic vein and lasted six weeks. The urine was not free from albumen nor had the patient recovered her strength until the same period of time had elapsed.

Another common error in technic is the neglect to filter the solution before use. It is easy to understand how particles of glass from the ampoule or small portions of undissolved salvarsan might be injected into the vein with the unfiltered preparation. That freshly distilled sterile water should always be used is almost needless to mention. It is now recognized that many of the unpleasant results heretofore reported following the use of this drug were due to the water in which it was dissolved.

IMPROPER METHOD OF ADMINISTRATION.

Strange as it may seem, some physicians continue to cut down upon the vein before inserting the needle. In one case recently called to my attention a young dental student received four salvarsan injections, and with them a like number of scars on his arms to carry through life as mementoes of the occasion. This is absolutely unjustifiable, for even in a small child a vein of sufficient size can be felt if not seen. When the median basilic is deeply situated or small, often the cephalic, median cephalic, radial or ulnar, veins will be found satisfactory. In infants a vein of the scalp, the external jugular or injection into the superior longitudinal sinus through the anterior fontanelle is preferable.

The precaution should be taken to make certain that the needle is in the vein during the injection of the salvarsan. If a Luer syringe barrel be at-

tached to the rubber tubing a regurgitation of blood into the barrel is evidence that the needle is in the vein and that the injection may be proceeded with. Much suffering and deformity has followed the escape of this irritating solution into the surrounding tissues. I have in mind a young girl to whom this accident occurred two years ago. An enormous scar resulted and although her Wassermann reaction is now three plus positive she could never be persuaded by the attending physician to take another injection. Intramuscular injections have been justly discarded by almost everyone.

Authorities differ widely regarding the proper dosage and the intervals at which salvarsan should be administered. Small doses at frequent intervals are not advisable, a resistance to these being acquired by the spirochetes, many of which escape destruction whereas they are overwhelmed and greater numbers destroyed by larger amounts. It should be remembered, however, that in the secondary stages of syphilis the initial dose of salvarsan should not be too large for at this time the danger of brain disturbances and Herxheimer reactions is greatest.

INTRADURAL MEDICATION.

Although much has been written and many cases reported in which patients have been subjected to intradural medication no consensus of opinion exists as to the permanent value of this method of therapy.

Many advance the argument that the blood supplies all living tissue with nourishment and any substance dissolved in it will be carried to the brain, the cord, and every other part of the body in which the blood circulates. In this connection, attention is called to the fact that in arsenical poisoning degeneration of the anterior horn cells of the cord occurs.

Nonne was unable to observe any difference in the course of cases treated with salvarsanized serum from that of others treated with the older methods. Personally I have not seen any brilliant results, although it cannot be denied that many cases have shown temporary improvement at least. In the Swift-Ellis method this is without doubt achieved in many instances with the help of the intravenous injection which precedes the intraspinal administration of the salvarsanized serum. In many cases the rest and attention which of necessity accompany the treatment are partly responsible for the improvement noted, and finally it must be remembered that remissions are characteristic of syphilis of the central nervous system. It seems reasonable to believe, however, that the arsenic and the antibodies introduced into the spinal canal, as well as the removal of a quantity of abnormal spinal fluid, would prove of benefit. In fact, the withdrawal of the same amount of spinal fluid alone will produce favorable alteration in the serobiologic findings. It should be borne in mind that Wechselmanns, Sicard and Block, Zoloziechi, Kapland and others detected arsenic in the spinal fluid after the third or fourth injections of salvarsan or neosalvarsan given by the intensive method. Professor Benedict of Cornell found more arsenic in the spinal fluid twenty-four hours after the intravenous administration of salvarsan than was present in a like amount of salvarsanized serum.

In this connection the suggestion of decreasing the pressure of the spinal fluid after the intravenous injection of salvarsan made by George Hall and carried out by J. H. Barbat in a case reported recently is of interest. In Barbat's case 43 cc. of cerebrospinal fluid were withdrawn immediately after the intravenous injection of 0.9 of neosalvarsan. This was done with the idea that the lost spinal fluid would be replaced at a time when the blood contained the maximum amount of the drug. A specimen of spinal fluid removed four days later showed 1 to 100,000 metallic arsenic. It is impossible to obtain a larger amount after the introduction of salvarsanized serum according to the Swift-Ellis technic. Neosalvarsan was used because of the fact that this preparation is thought to remain in the blood serum rather than enter and remain in the red cells as does the older drug.

It might be added, however, that in the majority of cases reported in the literature in which arsenic was found in the spinal fluid intravenous injections of salvarsan had preceded the examination. None was found when neosalvarsan had been used.

I have recently used this method in two tertiary cases, one with positive, and the other with negative blood and spinal fluid findings. In the first case 0.9 of neosalvarsan were administered intravenously and 30 cc. of spinal fluid immediately withdrawn. Examination ten days later showed no trace of arsenic. At this time 0.6 of salvarsan were injected intravenously and 30 cc. of spinal fluid withdrawn. Notwithstanding the fact that the spinal fluid withdrawn the following day was contaminated by a small amount of blood it contained no arsenic.

In my other case 0.6 of salvarsan were injected intravenously; 35 cc. of spinal fluid were immediately withdrawn. Half of this escaped in a stream under considerable pressure. Examination of the spinal fluid 48 hours later showed a trace of arsenic.

Whenever the Swift-Ellis method of intradural injection of salvarsanized serum is justifiable, the intensive combined treatment having been tried and failed, the technic of the originators of the method should be strictly adhered to. It seems to be a common practice to use a serum prepared from blood which shows a positive Wassermann reaction when the spinal fluid is negative to all serobacteriological tests. In my opinion this procedure is altogether unwarranted, and no benefit can result therefrom.

Freyermuth in a recently reported series found that in every case where the spinal fluid became negative the blood Wassermann was negative prior to the treatment with salvarsanized serum.

Another not infrequent error is in the injection of a larger amount of serum than the quantity of spinal fluid withdrawn. An illustration of this may be mentioned which occurred in the practice of a local physician. Eleven centimeters of spinal fluid were removed and 27 centimeters of serum injected. The patient immediately complained of excruciating pain over the entire body which was

only relieved after the withdrawal of 35 cc. of spinal fluid. He was confined to his bed for four days, but finally recovered. In another case worthy of mention the unfortunate patient died two hours after this mistake had been made, the autopsy showing cerebral hemorrhage. Another fatality resulted shortly after the injection of a large quantity of air into the spinal canal, and a third patient died ten hours after the injection of 20 cc. of a salvarsanized serum which had not been inactivated. The value of these observations, however, is lessened by the fact that the complete histories of the cases could not be obtained.

The following brief history was called to my attention by a colleague who had attended the patient. It illustrates the result of faulty antisepsis.

Mrs. A. contracted syphilis in 1901 and received treatment for two years following the appearance of the secondaries. In October, 1913, symptoms of tabes appeared; the blood Wassermann was three plus positive. She was given eight intravenous injections of salvarsan at intervals of one month. These were followed by mixed treatment for four months. Examination of the blood on October 12, 1914, showed a two plus Wassermann reaction. Three more intravenous injections of salvarsan and one injection of neosalvarsan were given at intervals of two weeks. On January 30, 1915, the blood Wassermann was negative, but the spinal fluid showed a three plus positive and a cell count of 34. Thirty cc. of salvarsanized serum were injected intraspinally on February 12, 1915. The headache disappeared and the spinal symptoms improved. On April 6th another intradural injection of 32 cc. was given, marked improvement resulting. All symptoms disappeared, the patient stating that she had never felt better in her life. On May 2nd examination of the spinal fluid showed a one plus Wassermann. On May 8th a third intraspinal injection consisting of 25 cc. of serum was given. The next evening the patient complained of severe headache and pain in the back of the neck. The temperature was 102°. The following day the temperature reached 104°, the next day 106° with delirium. The spinal fluid was very cloudy and contained many pus cells and gram positive bacilli. The Wassermann was negative. Death supervened on May 13th.

The infection was probably caused by the hands of the nurse who had handled the plunger and barrel of the syringe after removing them from the sterilizer.

In the two following cases neosalvarsan was injected directly into the spinal canal. Gordon's patient was a tabetic of 35, whose most prominent symptoms were pain in the lower extremities, ataxia, incontinence of urine and constipation. He had at one time been treated with potassium iodide and mercury. The Wassermann was positive in blood and spinal fluid. After one injection of salvarsanized serum all symptoms improved with the exception of the constipation. Two months later the bladder disturbance returned and this time neosalvarsan dissolved in the spinal fluid was injected directly into the canal according to the technic of Ravaunt. This was followed by severe pain in the legs and vomiting. Retention of urine and incontinence of feces began. Erythematous patches, later becoming gangrenous, appeared on the penis, scrotum and sacrum. Two weeks later he was unable to walk; sleep was impossible on account of the agonizing pain in the legs. All symptoms became gradually worse until death supervened.

In the other case mentioned in a recent journal of a patient with general paresis, three weeks after the sixth intraspinous injection of neosalvarsan, all of the injections having been tolerated without great discomfort, an acute ascending paralysis of the Landry type developed and death supervened.

In view of such disasters I do not consider advisable the intradural injection of salvarsan or neosalvarsan dissolved either in water or spinal fluid or the addition of these preparations to salvarsanized serum.

CONCLUSION.

My conclusion may be expressed in the form of "Don'ts":

Don't use salvarsan unless positive indications for its employment exist.

Don't expect as much from neosalvarsan as from salvarsan.

Don't give salvarsan in the office.

Don't give salvarsan at too frequent intervals or in too small doses.

Don't omit any details in preparing the solution to be injected.

Don't neglect to filter the solution before it is injected.

Don't cut down on a vein.

Don't inject any of the solution into the tissues surrounding the vein.

Don't administer too large a dose at the first injection, especially in the early secondary stages.

Don't inject salvarsanized serum prepared from a Wassermann positive blood into a canal containing Wasserman negative spinal fluid.

Don't inject a quantity of salvarsanized serum larger than the amount of spinal fluid removed.

Don't inject air into the spinal canal.

Don't use intradural medication under any circumstances until the intensive treatment with intravenous injections of salvarsan, mercury inunctions or injections and potassium iodide has been given a thorough trial.

Discussion.

Dr. M. Krotoszyner: Dr. Stevens' paper contains a wealth of important information on salvarsan therapy, and, therefore, must be considered a valuable contribution to our knowledge of the use and abuse of that important drug. While I agree, theoretically, with Dr. Stevens' objection to the application of the old salvarsan in office practice, I, nevertheless, have been compelled to use it of late, owing to the want of neosalvarsan. Fortunately I have, so far, seen no untoward result, in spite of repeated ambulatory administration of the drug.

Dr. Stevens' objection to neosalvarsan is, in my opinion, too sweeping. It is a very valuable remedy and, in the great majority of cases, perfectly sufficient in its efficacy, while its administration is not fraught with the dangers so often encountered in connection with the old salvarsan.

CHRONIC APPENDICITIS COMPLICATING PULMONARY TUBERCULOSIS.

By JNO. C. KING, M. D., Banning.

All systematic writers upon pulmonary tuberculosis emphasize the frequency of gastric symptoms. Many claim that indigestion, in its various forms, is a necessary concomitant of the disease. The digestive organs are of utmost importance in all chronic diseases because they represent nutrition. In tubercular patients nutrition is almost invariably faulty. They are poor eaters, whether through poverty or habit. Forced feeding and other similar methods have fallen into partial disuse because of their supposed injurious effect upon the digestive organs; and yet, from the standpoint of nutrition they represent an important principle.

I wish to call attention to a point that, according to my observation, has been frequently overlooked. That point is the frequent existence of chronic tubercular appendicitis. I believe the appendix to be especially obnoxious to tubercle. When operating for tubercular peritonitis I have found the appendix more completely involved than other parts of the bowel and mesentery. In the cases to which I refer the classical symptoms of acute appendicitis are absent. The rigidity is not marked, may be very difficult to detect, as if the muscles had become accustomed to the irritation beneath and were no longer on guard. The fever present depends entirely upon the pulmonary condition. Pain in the right iliac is absent. The patient is convinced the stomach is the organ at fault. He cannot take much food without distress; is inclined to eat sparingly. There may be attacks of nausea, perhaps accompanied by vomiting from time to time. He will be constipated and will obtain relief from cathartics. He may have pain in the stomach and many indications of gastric or duodenal ulcer, without occult blood. When the gastric contents are tested there will usually be found hyper-acidity. There may be occasional exacerbations with a little rigidity and tenderness over the appendix. The patient will progress favorably for a time and will then have one of his accustomed attacks of what he terms indigestion which, he insists, will be relieved by a purge. He thinks that if his stomach could only be cured he would recover from his lung trouble—and his opinion is pretty nearly correct. He has been treated by lavage, by dieting, by pepsin and acids, by bismuth and by all sorts of dope. One tries to fatten him and succeeds for a time, then the stomach rebels and he relapses.

He has chronic tubercular appendicitis. If his appendix is removed his indigestion will vanish. It may require some weeks' time for him to recover his power of digestion, especially to overcome the habit of gas formation, but he will get well. I have been astonished to note that several consumptives for whom I had made an unfavorable prognosis entirely recovered from the pulmonary disease after removal of the appendix. I do not know why. Perhaps the cause of the persistent irritation of the digestive organs had been removed, thus giving the patient power to respond to treatment that had, hitherto, been unavailing. It is not to be assumed for a moment that chronic appendicitis is the basis of all, or of most, cases of indigestion. I do believe that patients who suffer from pulmonary tuberculosis also are burdened with tubercular appendices in more instances than we have been accustomed to recognize. In many of these cases the removal of the appendix will facilitate a cure of the lung disease.

Indeed, it would appear to me that most cases of *chronic* appendicitis are tubercular. I do not mean those which have frank attacks of recurrent appendicitis, but the sluggish, ill-defined cases that are so difficult to diagnose. While discussing this problem with Dr. Browning he informed me that Dr. Rea Smith had expressed to him the same opinion. Dr. Beebe, of Ann Arbor, has recently called attention to the same point. Permit me to report two cases, selected from quite a number, to illustrate two types. A young man referred to me by Dr. Browning came to my Sanatorium very ill with pulmonary tuberculosis. He improved quite a bit, then had what he termed a bilious attack (whatever that is). Had been subject to such for years. Took calomel, on his own responsibility, and claimed he felt all right. However, he had lost weight, his appetite was poor, he felt some indefinite gastric distress. He lost what he had gained and his lungs were more moist and irritable. During a year this history repeated itself. On the whole he improved but each "bilious" attack robbed him of some of his chances. What is biliousness? Pathology answereth not. If modern medicine teaches anything it inculcates the fact that gastric symptoms depend upon a definite pathology. To the layman and to the thoughtless doctor they mean calomel. We have learned that cathartics are absolutely contra-indicated in all acute abdominal conditions. We still have to learn, most of us, that purges should be avoided in pulmonary tuberculosis. There are better methods of "moving the bowels." Three years ago I removed this man's appendix. He promptly recovered from his pulmonary disease and has remained well. Two and a half years ago I did an appendectomy for a young woman who was in the early stage of pulmonary tuberculosis. She had been under my care for months without improvement. Her gastric secretions were normal but her stomach was irritable; no appetite, occasional nausea; much flatulence; muddy skin; slight daily fever. The symptoms were covered by the old phrase "intestinal indigestion." She had taken a course of what her physician called intestinal antisepsis, with purges from time to time. Her lung infection was advancing because mal-nutrition sapped resistance. There were absolutely no symptoms of appendicitis, other than these above recorded—no tenderness, no rigidity. After the operation she rapidly improved and remains well.

I do not believe that administration of ether is contra-indicated by pulmonary tuberculosis. A somewhat extensive experience has taught me otherwise. I have never witnessed "shock" in any consumptive upon whom I have operated. One

last point: when removing an appendix from a tubercular patient we should be careful to remove any enlarged glands in the immediate vicinity, otherwise a sinus is apt to follow. I have noted one instance in my own practice and one, each, in the practice of two other surgeons. Those of us who conduct Sanatoria should do, or have done, all needful surgery in our cases of pulmonary tuberculosis. As I have pointed out upon another occasion these people require a good deal of nose and throat work in order to afford them (some of them) the best chance of recovery from their lung disease.*

NOTES ON SYPHILIS OF THE CENTRAL NERVOUS SYSTEM.*

By THOMAS G. INMAN, M. D., San Francisco.

It seems evident, even to the most critical, that syphilis, as we know it, is the result of invasion of the body by the treponema pallida. This organism has been isolated from the primary lesion and from the tissues of the body in the secondary and tertiary periods. It has been secured in pure culture and re-inoculated into susceptible animals has reproduced the disease in the characteristic forms peculiar to the animals experimented upon. That the organism has not been found in the affected tissues in certain of the later appearing lesions is no reason for believing that these structural changes require the intevention of any special condition for their development. They can all be explained as end results of the primary tissue reaction.

It has been shown also that the disease may be propagated without the occurrence of the primary lesion, namely, by inoculation directly into the heart, testicle or blood stream of susceptible animals. Syphilis has been transmitted in man during the operation of transfusion of blood and by accidental wounds received at operation without a chancre appearing at the point of inoculation. This evidence and the not infrequent appearance of syphilis in individuals who have no remembrance of ever having had chancre has led some authorities to believe that, under certain conditions, it may be possible for the spirochete to gain access to the body through an apparently unbroken skin. Certain factors not understood at present render inoculation by other than the usual manner, i. e., into surfaces covered by flat epithelium and well supplied with lymphatics, a rather difficult matter.

The evidence justifying the belief in extraordinary methods of inoculation is sufficient, however, to cause one to assume the possibility of syphilis being present in any case presenting symptoms which may be explained by the presence of this disease even though the history of the patient is undeniably negative.

If one may base an opinion, in this matter, on the known behavior of the treponema pallida during its later residence in the body it would seem probable that, in an otherwise healthy individual with normal resisting power, the organism must first be able to secure a suitable resting place in the lymphatic tissues before its habitancy of the body becomes tenable. Beginning with the initial lesion the reaction produced in the tissues by the presence of the spirochete is substantially the same throughout. Whether the effect noted be in the skin, parenchymatous glands or in the central nervous system or its enveloping membranes the presence of the organism in the peri-vascular lymph spaces seems necessary before the characteristic reaction begins. It would thus seem reasonable to believe that syphilis is primarily a lymphatic disease. The early involvement of the lymphatic tissues, the length of time necessary for the disease to become disseminated throughout the body and its apparent progression and persistence in the lymph glands, peri-vascular lymph spaces and lymph cisterns of the central nervous system furnishes evidence in support of this idea.

The later manifestations of the disease are not caused by the organism per se but are determined by the encroachment of new formed tissue accretions upon important functioning structures. Thus partial or complete obliteration of blood vessels with consequent changes due to a lack of sufficient blood supply; the presence of gummatous infiltration causing pressure upon vessels otherwise healthy or upon other structures disturbing their normal physiological function determines the clinical symptoms which occur throughout the course of the disease.

Positive evidence in support of the belief that the central nervous system is involved very early in syphilis is accumlating rapidly. The idea is not a new one for as long ago as 1880 Lang [1] stated that the headache, lassitude and lethargy present in the second stage of this disease were due to meningeal and nervous system involvement. It has been left to improved methods of investigation, however, to show how often and to what extent this involvement occurs.

Routine examination of the cerebro-spinal fluid and more careful and complete investigation of the nervous system, especially those portions of it connected with the organs of sight and hearing, have furnished that positive evidence which was denied to earlier observers. Thus Ravaut,[1] in 118 cases of acute syphilis, noted changes in the spinal fluid in 71; Eicke,[2] in 136 cases in the primary and secondary stages found alterations in the spinal fluid in 60. Wile and Stokes,[1] Altman and Dreyfus,[1] Fahr [1] and others have noted similar changes. In many of these cases only a single examination was made and the figures, consequently, do not exactly represent the number in which changes might have been found had a number of examinations been undertaken.

Wile and Stokes [3] have recently shown that careful examination of the second and eighth nerves together with an examination of the general nervous system will add to the number having a positive spinal fluid. These observers examined twenty-six cases in this manner, and state: "From the point of view of all the methods used by us to ar-

* Abstract of remarks before the Riverside County Medical Society, May 8, 1916.

* Read before the San Francisco County Medical Society, September 14 1915.

rive at the condition of the nervous system, only one of the twenty-six cases in the series was frankly negative, and in this case the eighth nerve was not investigated. Two other patients presented, respectively, exaggerated patellar and Achilles tendon reflexes and slight decrease in bone conduction with normal hearing. The remaining twenty-three cases were positive in two or more particulars of the examination. Changes in the fundus oculi, as indicated by a neuro-retinitis, were noted in twelve of twenty-one cases examined. Eighth nerve involvement, as evidenced by decreased bone conduction and changes in high and low limits of sound perception, was present in eleven of sixteen cases examined. In twenty-two cases subjected to a complete neurologic examination nine were positive in some particular other than the second and eighth nerve involvement."

The figures just quoted represent the demonstrable nervous system involvement as it occurred in the usual run of cases applying for treatment at a dermatologic clinic and does not include those early fulminating types in which the nervous system suffers to such an extent as to place the patient, at once, in the hands of the neurologist.

It seems not unlikely that between the receipt of the primary infection and the end of the second stage there is a generalized syphilosis and that the lymphatics in and about the central nervous system receive their proportion of the infecting organism in all cases. That this cannot be demonstrated, clinically or biologically, in every case is not sufficient evidence in proof of the contention that the nervous system frequently escapes.

Whether or not this early infection of the central nervous sytem is responsible for the later manifestations of the disease such as paresis, tabes and cerebro-spinal syphilis is not positively known. Thus Collins,[1] quoting McIntosh and Fildes, states that "The reason for the slight reaction with a large number of spirochetes in acute syphilis and an extensive reaction with a small number of spirochetes in chronic syphilis is due to the fact that the tissues become sensitized, i. e., become altered in their susceptibility to the action of the virus. This corresponds to the alterations in the reactions produced by certain viruses, the so-called allergie of von Pirquet. The type of hypersusceptibility present in tertiary syphilis is developed as an immunity response of an intoxication of the tissues occurring in the acute stage of syphilis. The actual occurrence of the lesion is due to an exacerbation of activity of spirochetes which have been dormant. When the interstitial tissue of the central nervous system is the sensitized part exposed to the delayed or persistent action of the spirochetes, the result is a gumma. When the parenchyma is the tissue affected, the disease that results is paresis or tabes or both."

Is it not likely that just the opposite of this takes place? That is, that during the progress of the disease an active immunity is produced throughout the body, an immunity which acts upon the syphilitic organisms causing their destruction, or at least inhibiting their activities, in proportion as the immunizing bodies are brought in contact with them; that the tissues of the body also become immune in proportion as they come under the influence of the immunizing substance; that there exist foci of exudate into which this immunizing substance imperfectly penetrates leaving in the interior an area in which the organisms may remain undisturbed until, as the state of immunity in the surrounding tissues decreases, they again set up their customary local reaction and, finding their way into the lymph or blood stream, reinfect other structures in the body where the state of immunity has ceased to exist. This would be in accord with the so-called "Non-sterilizing immunity" of Ehrlich. Syphilis is a disease which is characterized by numerous remissions, the symptoms disappearing from time to time either spontaneously or as the result of treatment.

The presence of numerous lymph spaces about the central nervous system and the passive state in which these structures exist offers a favorable resting place for the spirochete and may have some influence in determining recurrences in this region. It seems that where these lymph spaces are largest tissue reactions are most common as at the base of the brain and along the posterior surface of the spinal cord.

To state the matter briefly, syphilis evidences itself in the central nervous system first upon the blood vessels and this primary change consists in an infiltration of lymphocytes and plasma cells in and about the arteries and veins with subsequent thickening of the intima and adventitia, a lessening in diameter of the vessel lumen, a coalescence of the perivascular infiltrated areas and the production of a more or less extensive thickening which in the meninges may involve large areas. This is the so-called gummatous infiltration or meningitis syphilitica. A more localized accumulation of the same elements produces the tumor-like masses known as gummata.

To circulatory disturbances in the thickened blood vessels, to encroachment upon the unprotected roots of the cranial and spinal nerves and to pressure upon the brain and cord by the thickened meninges is ascribed the varied picture which we know as cerebro-spinal syphilis.

The secondary changes such as paresis, tabes, myelitis and the like can be explained as end results of the primary changes mentioned above although there are writers who believe that paresis and tabes especially require the intervention of other factors for their production. It is not unlikely that in every case of syphilis a number of influences are always at work in determining the extent of the effect which the invading organism will have upon the tissues. It is only necessary to mention the variation in the virulence of the spirochete, the resistance, or lack of resistance, of the individual, his mode of life and habits, of which, perhaps, the most important are his food, his drink and his work.

That the present day treatment of syphilis of the central nervous system is unsatisfactory is evidenced by the constantly appearing descriptions of new methods of administering the well known specifics mercury and arsenic, to say nothing of the contradictory statements for and against each method.

When the disease has progressed to the extent that conducting tracts are degenerated as in posterior columns in tabes, nuclear degeneration as in cerebro-spinal syphilis or softening of cortical cells and disappearance of fibres as in paresis we may as well admit at once that treatment of any kind will forever prove futile in so far as absolute cure is concerned. But it is often impossible to state that these changes have taken place for extensive gummatous infiltration of the meninges about the frontal lobes may simulate some of the phases of paresis just as a like infiltration in the membranes enclosing the posterior roots may produce a clinical picture not easily distinguished from that seen in some types of tabes. Indeed I believe that one would not be far wrong in expressing the opinion that most of the good results recorded as obtaining in the treatment of paresis and tabes are to a large extent due to the cure of a co-existing meningitis and arteritis.

Treatment, however, must be administered in any case and should be checked up, where possible, by examination of both blood and spinal fluid in order that improvement or the reverse may be noted and treatment governed thereby. Whether the drug selected be mercury or salvarsan, or both, they must be pushed to the limits of the patient's endurance. Nothing defeats the end which treatment is expected to bring about like half-hearted treatment. The spirochete becomes immune to salvarsan and perhaps to mercury also, when administered in quantities insufficient to kill it. One should also remember that the benefits following a dose of salvarsan reach their maximum, in the majority of cases, in forty-eight hours after the dose is administered and after three to five days none of the drug remains in the body. It was because of this rapid elimination that Prof. Wechselmann [4] recommended the injection of neo-salvarsan epi-fascially shortly after the administration of the salvarsan, in order that, by reason of its slower absorption, the action of the arsenic might be continuous. The pain caused by the administration of the drug in this manner may be lessened, if not entirely prevented, by first injecting a small amount of a 2% sol. of novocaine in the trial injection used to determine that the needle is in contact with the deep fascia.

Another result of the occasional dose of salvarsan other than that affecting the spirochete may be explained in this manner: Given a mass of exudate into which the drug penetrates with difficulty or not at all, the effect of a single dose is expended on the periphery, the resulting solution of the cellular elements reached by the drug permits the remaining intercellular substance to contract about the mass and its peripheral portion, increasing in density in this manner, forms an additional barrier to the ingress of future medication.

It must also be borne in mind that relief of presenting symptoms affords no assurance that the patient is freed of his infection nor have we any available sure means of telling when he is cured. The Wassermann reaction may become negative, the spinal fluid appear normal, clinical examination of the nervous system disclose no disturbance of function yet in a year or two the patient returns with a cranial nerve palsy, a syphilitic paraplegia or evidences of an active meningitis. The only positive evidence of cure is shown in the ability of the individual to accept a new infection and this means of proof is, at present, out of the question.

There is a time in the history of every syphilitic patient when a complete cure may be brought about. Clinical experience and experimental evidence show that in salvarsan we have an agent which is capable of destroying the treponema pallida, in vivo, if the drug can be brought into contact with the parasite. This effect is to be expected only before the tissue reaction has produced those conditions, mechanical or biological, which seem to protect the organism from the effect of the drug. The ideal to be sought for in syphilis therapy is to prevent the disease from entering upon the second stage. The responsibility, in many cases, rests with the physician who sees the case first.

Too, syphilis is just as much a matter for public control as are smallpox and scarlet fever and it should be a part of the function of public health boards to disseminate literature instructing the laity in the necessity for early treatment, warn them that any genital sore may be syphilitic, provide means for securing adequate treatment for those unable to pay for it and to secure legislation prohibiting treatment of the primary sore by persons not qualified to do so.

A proper appreciation of the syphilis question by both medical men and laity and education as to the greater relative value of early treatment over that administered late in the disease will do much toward abolishing the evil effects of the often incurable tertiaries.

There is much evidence in support of the theory that leptomeningitis is the forerunner of the later and more fixed types of central nervous system syphilis such as paresis and tabes but for our purpose it is not necessary to know by what means these later effects of the syphilitic infection are determined. To know whether by a sensitization of the nerve structures this end is accomplished or whether the spirochete, finding a congenial nidus for hibernation and propagation in the lymph spaces of the central nervous system, secretes itself here until conditions favorable for its active existence present themselves, would be interesting from a scientific standpoint but that with this information the indications for treatment would be any clearer than they are now is doubtful. What must be borne in mind is that all of those conditions which were once known as the para-syphilides are due to infection of the body by the organism which causes syphilis and that, other things being equal, the longer the period of time allowed to elapse after the primary infection before adequate treatment is instituted the greater will be the difficulty of obtaining a cure.

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ROUTES OF INFECTION IN TUBERCULOSIS.*

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There is no subject about which there has been so much controversy as about the exact way in which the virus of tuberculosis gains access to the human body and in which it is disseminated after it once has gained entrance. Still when we carefully sift the evidence, we cannot fail to perceive that there is a considerable amount of accurate information at hand, the issues appearing hazy and befogged only through the constant, insistent reiteration of certain convictions by those who in some way or another have become engaged in defending some more or less exclusive theory.

Baumgarten of Tübingen, as you all know, has held for many years that tuberculosis of all forms is most commonly acquired in utero. A transmission of the disease in this case might arise either by means of infected sperm or through the placenta, a primary infection of the ovum before fertilization being very unlikely.

It is a well established fact that the semen of tuberculous individuals contains tubercle bacilli not so very rarely even in the absence of any tuberculous disease of the genital organs, and the possibility certainly exists that by means of such infected semen the developing ovum might become contaminated. This interesting question has been very carefully studied experimentally in rabbits by Friedmann,[1] who comes to the following conclusions: "It should be regarded as proved that tubercle bacilli can enter the fertilized egg cell, that the latter does not perish as a result of the invasion, but may develop into a well-formed animal. In addition, the bacilli transmitted in this way may still be present in certain organs of the new born. On the other hand, it is proved that the rabbit embryo does not become tuberculous in spite of the bacilli it has received in statu nascendi nor the young animal either in the first time of its post-embryonic life." As a result of this investigation the much less rigidly controlled, similar positive experiments of Karlinski[2] on goats fall to the ground, especially since in his animals the infection appears to be closely associated with the alimentary tract. The possibility of a direct infection of the fetus from a tuberculous father may therefore be safely excluded from practical consideration.

As a result of Schmorl's[3] work we know that tuberculous infection of the placenta is much more common than was believed formerly. In 20 placentae of tuberculous mothers he found manifest tuberculosis in three, and few scattered microscopical foci in six. In spite of this fact, evidence of congenital infection in man is extremely rare, and from what we know of the lack of resistance of the tissues of young children to tuberculous infection, we are not at all warranted in assuming that such infections would remain latent for many years to become active at the time of puberty or even later, as has been suggested by some. If infants do become infected, as they naturally sometimes will, their disease makes rapid progress, and at autopsy is found very extensive and widely disseminated, the appearance of the disease being very similar to that which we find in the least resistant animals, like guinea pigs.

There is no question that small children frequently infect themselves with the dirt which gains access to their mouth from their constantly soiled fingers, as emphasized by Volland.[4] Tuberculosis of the tonsils, or cervical glands, or both, is a very common result, and naturally bacilli taken up in this way may be carried either into the lungs or into the alimentary tract, and may set up foci of infection in those regions. However, even in children, it is becoming apparent more and more that the most common mode of infection is by means of the aspiration of infectious material into the lower respiratory tract. Unquestionably a certain percentage of children, variously estimated from about 15% to 25%, become infected by the alimentary route and in these cases the ingestion of bovine tubercle bacilli in contaminated milk seems to play a certain role, but of these same children some acquire a simultaneous or subsequent infection by way of the tonsils or the respiratory canal or both. Such a case of apparently triple infection of a baby nine months old has been described by me in a previous paper.[5] In adults the clear cases of primary intestinal infection are much less common. In a series of cases of my own, for instance, I found them to represent about 6% of the active cases of tuberculosis among adults. The extensions of the process in these cases, if there were any, were largely in the abdominal cavity involving the mesenteric glands, the peritoneum, the genito-urinary tract in the male, the internal genital tract in the female, the adrenals, and the liver. In a comparatively large proportion the fatal termination was due to acute or subacute disseminated tuberculosis.

The original anatomical conception of a primary infection of the lungs in ordinary cases of chronic pulmonary tuberculosis of the adult, has been greatly strengthened not only by more careful anatomical investigation of incipient stages, but also by experimental evidence. Birch-Hirschfeld's[6] anatomical studies which have been amply confirmed by later investigators will always remain classic in this regard. He demonstrated the fact, that in the vast majority of cases fairly large bronchi in the posterior part of the apical portions of the lung are primarily affected. Occasionally only did he find the primary focus in the pulmonary tissue itself, when it is naturally much more difficult to tell in which way exactly the infectious material had en-

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tered this organ. It has also been shown by Schmorl [7] that, when the lungs do become infected by way of the blood current from some other focus, that the distribution and later development of the lesions is entirely different from that in ordinary pulmonary tuberculosis.

The strongest *experimental* evidence which we possess in favor of the frequency of pulmonary infection, is the fact that susceptible animals can be inoculated much more readily by the respiratory than by the intestinal route. The first tentative comparative experiments in this regard were conducted by Gebhardt (1890) and Preyss (1891), but the most careful work in this direction was done by Findel [8] in Flügge's laboratory in 1907. Findel found that, in case of inhalation, 62 tubercle bacilli approximately constituted a certainly infectious dosis for grown guinea pigs, whereas he obtained no results, when 6000 times this number was introduced into the alimentary canal with the food. It seems, that it takes probably a dose one million times larger than the one that kills by the respiratory route, to effect an infection by way of the alimentary canal in these animals, and the same holds true for other species of mammals that have been investigated. In fact, some resistant animals like rats can be infected by the aerial route comparatively easily, by the intestinal practically not at all.

It would also appear from Findel's records, that the disease produced in his guinea pigs by the aspiration of few bacilli resembles pulmonary tuberculosis in man in so far as it is more chronic; the tubercles become larger and show cavitation. The peculiar localization of the lesions at the apices is not reproduced, however.

It is true, that more or less isolated pulmonary lesions have been produced in resistant animals by subcutaneous injection or in susceptible animals by introduction of tubercle bacilli into especially resistant organs like the bladder, but I cannot believe that these experiments are directly applicable to human pathology so far as pulmonary tuberculosis is concerned.

The usual localization of the virus in man in the apices is still a very puzzling problem, in spite of much ingenuity displayed in attempts at finding its solution. Are the tubercle bacilli carried more easily to this part of the lung? If not, is there any special difficulty in eliminating them after they have arrived there? Is perhaps the apical tissue less resistant to tuberculosis than the rest of the pulmonary tissue, on account of a relative anemia, for instance? These are some of the many questions which have been asked. It has been stated in a general way, that the apices in man are poorly ventilated; I believe, without much justification. One is apt to forget, that the lungs are of a wonderfully equally distributed elasticity throughout, which elasticity causes them to expand equally throughout, wherever the pull may be. This extension of the elastic pull all over the lung is greatly facilitated by the fact that they are not fastened on the surface, but slide easily against the chest wall, which movement may be observed very clearly on direct inspection through the intact pleura. As a matter of fact, the apical parts of the lungs of *animals* would appear to be in a much worse condition so far as ventilation is concerned than the same region in man. It is true, they do not project as much above the upper aperture of the thorax, but the breathing in animals is entirely abdominal, whereas in man even in quiet breathing there is some excursion to the upper part of the chest, and yet animals do not develop apical tuberculosis either spontaneously or experimentally.

I am convinced, that ordinarily the apical parts of the lungs in man are as well ventilated if not better than others, the posterior lower parts, for instance; for one reason on account of the shorter reach to the main bronchi. I also cannot believe that even in the erect posture there could be enough of a difference in the circulation in the upper and lower parts of the lung to account for any difference in resistance. That there should be a mysterious lack of resistance in the apical portions to infection in general or to tuberculosis in particular, is equally unproved. The only tangible difference, which remains is this, that in forced expiration air may be driven up into the apices on account of their not being enclosed in the rigid wall of the thorax. In this way infectious material in the bronchi might be thrown up toward the apical parts of the lung. This would mean, that infected material breathed in *in man* would not be carried at once to the finer ramifications of the bronchial tree, but would be deposited in the large bronchi near the bifurcation where it would be received in the bronchial mucus, and in most cases expectorated.* During forced expiration such infected mucus might be carried up by a sudden rush of air into the bronchi of the apices, where an infection may result in the more delicate mucous membrane. This assumption also would give at least some explanation why the infection of the apices so frequently takes place on both sides more or less simultaneously.

One would imagine that the distribution of dust, more especially of coal dust, in the lungs of man, would give some clue in regard to the probable distribution of aspirated infectious material, and it has been claimed, that such dust did accumulate in larger quantity in the apical parts of the lungs. One should not forget, however, that disease often contributes to effect this localization. It is well known that dust of this kind accumulates in areas of chronic inflammation and since the majority of individuals have old scars in their apices, the apices naturally appear more deeply pigmented. The normal distribution of dust can be studied only in perfectly healthy lungs, and we all know, that they are the exception rather than the rule. I have lately looked over a series of such lungs, and I find that under these circumstances the distribution of the coal dust is remarkably general, but that the posterior parts of the lungs are somewhat more deeply stained than the anterior ones, both in upper and lower lobes. There is no striking excess of pigment in the usually infected region in the apices

* That such aspirated material may remain in the bronchi for weeks before being eliminated, is brought out very clearly in Arnold's experiments on dust inhalation. (Arnold: Staubinhalation und Staubmetastase. Leipzig, 1885.)

either in early or late stages of uncomplicated anthracosis.

The attempts by Freund, Hart,[9] and others to deny the general predisposition of the apices to tuberculous infection, and to substitute instead an individual disposition due to disturbances in development or use of the upper aperture of the chest are seriously weakened by the fact that so many individuals, variously estimated from 60% to 90% or more, do contract a tuberculous infection of their apices from which the vast majority recover spontaneously. If the local predisposition by anomalies of the upper aperture of the chest is so widely disseminated in the human race, it loses much of its interest. If it is not a question of favoring infection, but of favoring the development of the disease, then we have other and much more substantial general factors to fall back on than such at best illy defined local conditions, quite apart from the fact that we are fairly certain, that stopping the respiratory excursions rather favors healing of tuberculous processes than otherwise. The well-known experiments of Bacmeister[10] are very interesting, but hardly reproduce conditions such as we find them in man. I may merely state, that in practically all his experiments there were other foci in the lungs of the same age as the one at the apex, in order to point out one of the differences, and there are others which it would lead me too far to enter into on this occasion.

These considerations about the sources of infection in the ordinary cases of tuberculosis may not be of overmuch interest to men engaged in the specialties, still I could not refrain from saying this much, because I am firmly convinced, that the specialist should be possessed of the best knowledge in general medicine first, before undertaking special work in any part of the human anatomy. The human body is a whole first and all the time; it is only we who for our own convenience and often not less to our confusion try to break it up into its component parts. It is one of the most promising signs in the development of modern medicine, that this is being realized more clearly from day to day all over the civilized world.

You are all familiar with the fact that the tonsil is a frequent point of entry for tuberculosis, more especially in children. About 5% of tonsils of children selected at random for examination show histological evidences of tuberculosis and very frequently tubercle bacilli seem to pass through them to the regional lymph glands without producing any local infection. Secondary infections of the tonsils in cases of pulmonary tuberculosis are even more common. Other parts of the upper respiratory and alimentary tract are much less frequently exposed to primary infection.

There are few cases in literature of well authenticated infection with tuberculosis by way of decayed teeth, but the observations of Partsch[11] and Euler[12] prove conclusively that such infections may occur occasionally.

In connection with the usual anatomical seat of the pulmonary infection in a small bronchus, it is interesting to recall, that primary infections of the larynx or trachea and larger bronchi occur once in a while, as one would presume if he accepts the theory of the conveyance of the disease by means of the air. This is well known in case of the larynx, but Gidionsen,[13] Hedinger,[14] Hansemann, and Schmorl have described cases in which the primary focus, usually in the form of a tuberculous ulcer, was in the trachea or one of the main bronchi. In these cases the most careful search for possible primary lesions elsewhere failed to reveal any.

Steward[15] has collected the records of 100 patients with tuberculous infection of the nose. Of these, more than one-half (58%) appeared to be primary clinically. Even if we make allowance for the fact that clinically one cannot exclude a focus elsewhere with certainty, the figure is suggestive. The most common site is the anterior part of the septum. The disease appears as an infiltration with or without ulceration or sometimes in the form of tumor-like masses of slow growth which may project into naso-pharynx. It is especially these tumor-like cases which usually seem to be primary. Tuberculosis of the accessory sinuses, except by extension in nasal lupus, appears to be exceedingly rare.

The relations between the conjunctiva, the lachrymal passages, and the nose being such close ones, it is not surprising that Hinsberg[16] in nine cases of tuberculosis of the nose found disease of the lachrymal passages or of the eye and its surroundings in five.

The mode of infection in tuberculosis of the conjunctiva has been much discussed. Casali[17] on the basis of his experiments, believes that the infection is usually an exogenous one, whereas Stock[18] reports a severe tuberculosis of the conjunctiva in a rabbit 4½ months after intravenous injection of tubercle bacilli. There are several cases on record of what was clinically regarded as primary tuberculosis of the conjunctiva. The most convincing observation of this kind appears to be the one described by Thompson.[19]

For practical purposes it is well to remember that a considerable proportion of cases of empyema of the lachrymal sac are tuberculous (Bribak, 2 in 16; Stock, 6 in 106).

The skin is so well protected, that a primary infection of the same is rather exceptional. We all know of the tubercles in the skin of the hands of pathologists and similar lesions observed in butchers who handle much tuberculous material; but otherwise infection by contiguity from mucous membranes or from tuberculous glands (Jones[20]) or by way of the blood current seems to play a more important role than is commonly believed, except of course in the direct sputum infections of the skin of the hands and elsewhere, which are fairly common in consumptives.

One of the most interesting chapters of my subject is that on the tuberculosis of the middle and inner ear. We can roughly distinguish between tuberculosis of the middle ear in children, tuberculosis of the middle ear in consumptives, and more or less isolated tuberculosis of the mastoid both in children and adults. We owe much of our

knowledge of the pathology of these conditions to Habermann,[21] who did his work in Chiari's laboratory in Prague. He became convinced that the infection in many cases was primarily one of the mucous membrane of the middle ear, and he first gave a clear account of the mode of infection, which undoubtedly is the usual one in consumptives. He said "that the tubercle bacilli attached to small particles of sputum are thrown in coughing through the Fallopian tube into the middle ear." He did not, however, deny the possibility of a hæmatogenous infection. How frequently such hæmatogenous infections occur and under what circumstances has been much discussed without leading to any general agreement. The cases are usually examined so late that it is impossible to still trace the mode of infection. In the cases of tubercular mastoiditis especially, infection by way of the blood current has suggested itself, but it has also been pointed out, that in them tubercular lesions in the mucous membrane of the middle ear are never lacking. The fact that the mucous membrane is often involved primarily, does not in any way prove that the infection must have taken place from the surface. Körner [22] suggests that tubercle bacilli may be carried from infected tonsils by way of the lymph current along the path of the Fallopian tube. Hæmatogenous infection, on the other hand, does not necessarily mean primary infection of the bone; there is no reason why the blood current should not carry the tubercle bacilli to the mucosa as well. If, however, one could prove that certain forms of tuberculosis of the ear were primarily located in the bone, then no other form of infection except the hæmatogenous could be considered. This is what Barnick [23] attempted to do, but he himself does not claim that his investigations are conclusive in this regard, only suggestive. Henrici [24] is much more positive that all cases of tuberculosis of the mastoid in children are hæmatogenous and primarily located in the bone. Brieger [25] in his monograph published in 1913 sums up the situation as follows: "It is probable that the transportation of the tubercle bacilli to the middle ear usually occurs by way of the Fallopian tube. Tubercle bacilli may also enter the *mucosa* of the middle ear by way of the blood current. Hæmatogenous infection in middle ear tuberculosis does not mean primary localization in the bone. It is not proved, that the marrow is the point of origin of certain forms of middle ear tuberculosis." In this last assertion he is undoubtedly correct, but the opposite is just as true and from more general pathological considerations it would be quite remarkable, if tuberculosis of the bone should not occur in the region of the middle ear, especially in children. I do not think, therefore, that it is wise to embrace any too exclusive view on the subject, and although the infection of the ear in consumptives undoubtedly most commonly takes place in the way described by Habermann, in other forms of tuberculosis of the ear the possibility of hæmatogenous infection either of the mucous membrane or of the bone should always be considered.

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Discussion.

Dr. C. F. Welty: As to tuberculosis of the nose, I agree absolutely with what the doctor has to say; about the tonsils, I am also of the same opinion; but when you come to discuss tuberculosis of the ear, there are so many phases that I will probably forget some of the things I want to say.

In the first place, you must bear in mind that tuberculosis of the ear never appears as such. You always have a discharging ear, and grafted on to your discharging ear, your tuberculosis appears; that is worth thinking of a great deal. If the tuberculosis entered by the blood stream you would have a spontaneous tuberculosis of the ear, which as yet we have been unable to diagnose.

Politzer's teaching about acute purulent otitis in tubercular individuals was this: Never allow that otitis to last for more than six weeks. In other words, operate your otitis without mastoid symptoms. The reason that he recommended operation was because of the infection that might follow, and an ear that is infected by tuberculosis will not get well by itself.

Here is another thing that the doctor calls attention to, in regard to the infection of bone. It is a known fact that tubercular ears in tubercular individuals (I am speaking only of proven cases of tuberculosis) usually succumb to meningitis by way

of the labyrinth. Many of the cases of chronic suppurative otitis media that have tuberculosis die if not operated on. Reasoning in such a way, we must believe that it is inoculated by way of the Eustachian tube rather than from the blood stream.

Dr. J. J. Kingwell: I want to state a case which has been in my hands for the last two weeks—a patient with positive tuberculosis of the intestines and lungs. Two weeks ago she had a coughing spell, followed by a severe pain and fullness in the ear. Within two days she sent for me. The canal had the appearance of an acute otitis—drum bulging, hyperemic. I did a paracentesis, but found no pus or serum. It was treated antiseptically. About a week ago I was called to see her again. The mucous membrane was swollen and pus exuded. A swab taken from the same proved positive tubercle bacilli. There are no symptoms of mastoiditis.

Dr. H. S. Moore: Speaking of tuberculosis of the nose or larynx: In a short paper I read a few months ago, I said I really believed it would be proven that there are no primary infections in the larynx; there may be in the nose. I ran a series of 200 cases in the Tuberculosis Clinic of Stanford having this point in mind, and Dr. Clark, the internist, always found the primary lesion elsewhere.

Dr. H. B. Graham: I want to thank Dr. Ophüls for the remarkably clear paper he has presented, and compliment him on the way he stuck to his subject—so much better than we get in our discussion.

I think we have not yet enough data to make a decision as to whether or not primary tuberculosis of the larynx actually occurs. The teaching in Vienna by Albrecht—who made a special study of tuberculosis throughout the body, its routes of infection—was that primary tuberculosis of the larynx was practically unknown, and that if it did occur, it was practically unknown to him. At one period, when he was working in the Allgemeine Krankenhaus, he found that in all cases of tuberculosis of the larynx, he could find healed active or passive lesions in the lungs or other portions of the body, which seemingly antedated the lesions in the larynx.

I believe in most of the cases that we say clinically are cases of secondary tuberculosis of the larynx, the route of infection is by the lungs and bronchial lymph nodes, or by sputum coughed up into the larynx. I simply repeat what Albrecht gave us in our work there, so my remarks are based entirely upon his findings.

I have been much interested in the subject of tuberculosis of the ear and the route of infection there because two years ago I had occasion to operate a case of tuberculosis of the nasopharynx in whom I had some time before made a diagnosis of tuberculosis of the middle ear. The patient was a very healthy woman of 35 who showed no evidences of ever having had tuberculosis of the lungs. She had a typical picture of tuberculosis of one ear which had healed spontaneously, leaving a latent labyrinthitis. When I saw her she had a picture of an acute middle ear tuberculosis on the other side. I hesitated about operating that side because she had already lost the one ear. In the course of my observations I found a granulating area on the vomer. It was limited entirely to the septum and was ulcerated and not lupoid. The lesion was curetted and sent to the microscopist and was returned with the diagnosis of tuberculosis. The lesion in the nasopharynx healed under cauterization and curettement after two months.

I am pretty positive that in this case the route of infection was from the nasopharynx into the ears. I do not believe that was a hematogenous infection; I do not believe, with Dr. Ophuls and the men he has quoted, that the route of infection is hematogenous but by the Eustachian tube.

I had occasion to look over the literature about a year ago for a paper which is to be published very soon on tuberculosis of the middle ear, and in all the literature I never found a case where there was not a very grave doubt of the hematogenous origin of the tuberculous lesion. The cases in the English literature are simply worthless; those in the German literature are very doubtful. It is so easy to believe that the tubercle bacillus may be coughed up into the Eustachian tube that it seems to be stretching the imagination to take that tubercle bacillus through the body in the blood stream.

A STATISTICAL STUDY OF RABIES IN CALIFORNIA.

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Since 1909, and until recently, rabies has been epidemic in California. Despite the dissemination of knowledge in regard to the control of the disease, rabies among animals in California steadily increased. The height of the epidemic has been reached and passed, and rabies may be considered under control except in Modoc and Lassen counties.[1] This is partly due to the peculiar tendency of an epidemic of rabies to spend itself, the measures instituted for control, and the fact that the disease has become endemic in the more populous communities.

The advent of the disease in coyotes in Modoc and Lassen counties, which was accomplished through infection traveling from Oregon and Nevada, was made the basis of a remarkable campaign against these animals by the California State Board of Health. The financial loss in livestock alone in Modoc and Lassen counties from rabies places this disease in the forefront as the enemy of the cattle and sheep men. Therefore, the prompt eradication of rabies is a necessity, both in city and rural communities, because of the serious element of human danger on the one hand, as shown by the large number of deaths from rabies in human beings in California, and from an economic standpoint on the other, as shown by the experience of Modoc and Lassen counties.

RESULTS OF LABORATORY EXAMINATIONS.

Beginning April 1, 1913, and ending March 31, 1914, 427 examinations of the brains of animals for rabies have been made in this laboratory. Of these specimens, nine were in such a state of decomposition as to make examination impossible. Seventy brains gave negative results and 348 were found positive. Three hundred and thirty-nine of the positive cases were diagnosed by the finding of Negri bodies and the balance by inoculation into rabbits and guinea-pigs. The animals affected were as follows: 317 dogs, 14 cows, 11 cats, 4 horses, 1 goat, 1 coyote.

We have received reports of the biting of 235 human beings and 207 animals by the animals proved positive by our examinations. As to months, the highest number of examinations were made in the cold months, December and January. This does not substantiate the popular belief in increased prevalence in summer. Twenty-five posi-

1 Geiger, J. C.: Is Rabies Under Control in California? Cal. State Jour. Med. February, 1916.

MAP OF CALIFORNIA
SHOWING COUNTIES AFFECTED BY RABIES
SINCE 1909.

AREA AFFECTED

INVESTIGATIONS OF BUREAU OF COMMUNICABLE DISEASES, CALIFORNIA STATE BOARD OF HEALTH, APRIL 1, 1916.

tive examinations were made in April, 22 in May, 23 in June, 22 in July, 25 in August, 21 in September, 38 in October, 20 in November, 44 in December, 43 in January, 34 in February, and 31 in March. The counties affected were as follows: Alameda 83, Santa Clara 50, San Joaquin 29, Placer 26, Fresno 20, Contra Costa 15, San Mateo 15, Kings 13, Sonoma 12, Sacramento 10, Nevada 9, San Bernardino 7, Stanislaus 7, Tulare 7, Butte 6, San Diego 6, Los Angeles 5, Merced 5, San Francisco 4, Napa 4, Calaveras 4, Amador 3, Imperial 3, Tehama 2, Marin 2, San Benito 2, Santa Cruz 2, Kern 2, Solano 1, Orange 1, El Dorado 1, San Luis Obispo 1, Yolo 1, Riverside 1, Ventura 1, Colusa 1. This makes a total of 36 counties against 31 of the previous year. One positive examination was made for the Oregon State Board of Health.

It must not be forgotten that diagnostic and other work is also done by municipal and private laboratories. For instance, the laboratory of the San Francisco Board of Health has made 71 positive examinations from April 1, 1913, to March 31, 1914; the laboratory of the City of Sacramento 3, the laboratory of the City of Los Angeles 2, and the laboratory of the City of Oakland 185. These figures show a remarkable redistribution of the areas of greatest involvement. This is strikingly shown when the figures are contrasted with those of the preceding year, which are as follows: San Francisco Health Department 279, Los Angeles 22, Sacramento 29, and Oakland none.

Beginning April 1, 1914, and ending March 31, 1916, a period of two years, 239 positive examinations of the brains of animals for rabies have been made in this laboratory. Of these, 10 were proven positive by animal inoculation, and the balance by the finding of Negri bodies on microscopical examination. The animals affected were as follows: 130 dogs, 45 coyotes, 27 cows, 16 calves, 8 cats, 4 horses, 3 sheep, 3 human beings, 2 bobcats, and 1 goat.

We have received reports of the biting of 142 human beings, 165 animals by the animals proved positive by our examinations. The counties affected were as follows: Modoc 78, Lassen 31, Alameda 19, Santa Clara 12, Fresno 11, Tulare 10, San Mateo 9, Contra Costa 7, Santa Cruz 7, Shasta 7, Kings 7, Tuolumne 6, Imperial 5, Stanislaus 4, Riverside 4, San Diego 3, San Benito 3, Siskiyou 2, Madera 2, Los Angeles 1, Napa 1, Placer 1, San Joaquin 1, Sonoma 1, Nevada 1, Santa Barbara 1, Tehama 1, Sacramento 1, Plumas 1, Sierra 1, and Yuba 1.

It is interesting to note the large number of animals proven positive that were received from Modoc and Lassen counties. Yet this number, large as it is, and representing only a period of a few months, is no index to the actual number of cases of rabies that have occurred in these counties. The large number of positive cases, practically sudden in their appearance, is what can be expected when rabies makes its appearance in a community where heretofore it never existed.

Two positive examinations were made for the Oregon State Board of Health. The laboratory of the City of Oakland in this period reports 43 positive examinations, the laboratory of the City of Los Angeles 20, the laboratory of the City of San Francisco 11, and the laboratory of the City of Sacramento 5. Considering the 970 positive cases reported up to April 1, 1914,[2] we have as a grand total 1,897 positive examinations for rabies in the State of California for the present epidemic up to date, 1,078 of which were dogs.

PASTEUR TREATMENT.

The widespread prevalence of rabies in California, as shown by the figures just presented, has made it necessary that the large number of persons bitten by animals known or suspected to have been rabid, to take the preventive treatment for rabies. The State Hygienic Laboratory and its branches, as well as bacteriologists deputized by the California State Board of Health in different cities of the State and at the Letterman General Hospital and the Mare Island Navy Yard, administer the Pasteur treatment free of charge. The treatments are given on the approval of the local health authority of the application of the patient, parent or guardian that it would be a hardship to pay for the treatment at the usual rates.

The 436 persons treated with virus obtained from this Bureau came from the several counties as follows: Alameda 139, San Francisco 75, Los Angeles 51, San Diego 21, Santa Clara 18, Sacramento 17, Placer 12, Contra Costa 9, Santa Cruz 9, Fresno 8, San Joaquin 8, San Mateo 7, Napa 6, Orange 6, Modoc 6, Ventura 5, Stanislaus 5, Butte 3, Sonoma 3, Kings 3, Shasta 3, San Bernardino 3, Amador 2, Yolo 2, San Luis Obispo 2, Lassen 2, Tehama 1, Monterey 1, Placer 1, Santa Barbara 1, Tulare 1, Marin 1, Sierra 1. Two treatments were supplied to the Arizona Board of Health, one to the surgeon in charge of the Mare Island Navy Yard, and one to the surgeon in charge of the Letterman General Hospital, Presidio, San Francisco.

The infection came from the bites of dogs in 403 instances, in nine cases from the bites of cats, and in four cases from the bites of coyotes. Six people were exposed to rabid cows and three to horses. Nine persons took the treatment as a precaution against exposure while doing laboratory examinations for rabies. The two remaining cases were inoculated with virus from human cases, one because of a bite and one because the saliva contaminated a fresh open burn.

Considering the number of persons treated during the time under consideration, 436, and the 205 persons treated and reported in a previous paper,[2] we have the sum total of 641 persons treated with virus manufactured by this Bureau. The scheme of treatment that has been in use at this Bureau up to April 1, 1916, has been the same as described in Bulletin No. 65 of the Hygienic Laboratory of the United States Public Health Service.

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2 Geiger, J. C.: The Work of the Pasteur Division of the State Hygienic Laboratory. Cal. State Jour. Med. August, 1913.

Of the cases of rabies in human beings, three were true failures of the Pasteur treatment, all being severely bitten, two near the central nervous system. Eliminating all persons treated who were not bitten, the percentage of failures with virus supplied by this Bureau was .491, less than ½ of 1 per cent. These statistics are extremely important and unique because of the fact that in over 98% of the persons bitten, the animals doing the biting were checked by laboratory examinations, with positive results.

There were few ill effects following the Pasteur treatment during the period under consideration. In one case treated at this Bureau, some weeks after treatment there was a peculiar twitching of the muscles of the right side of the neck. In another patient 11 days following the completion of the treatment there was severe pains in the left eye, later affecting the side of the face. This was present at intervals for about a week. In one of the cases there was vomiting. This occurred every day for a short period of time and stopped after the completion of the Pasteur treatment. In another patient the local reactions that usually appear on certain days of the treatment from different strength virus occurred after each injection. In four instances subcutaneous abscesses developed. The only serious complication reported was a slight paralysis of the lower limbs, with prodromal symptoms of nausea and diarrhea, which occurred several days after the completion of the Pasteur treatment.

The large number of persons to whom the Pasteur treatment was administered, with the resulting low mortality, is sufficient evidence of its efficiency. Rabies being one of the easily eradicated infectious diseases, there should be no excuse for its presence in any community. The dog, as it has been aptly put, being the principal reservoir of the disease, eradication can be accomplished surely and expeditiously by rigid enforcement of muzzling plus a strict interstate quarantine of at least six months. In California, now that the disease is rampant in the coyote, there is urgent need of active state co-operation with the United States Biological Survey in their commendable campaign of destruction of the predatory animals.

DANGER OF BATHS IN PATIENTS SUFFERING FROM ARTERIO-SCLEROSIS.*

By DR. WILLIAM WATT KERR, San Francisco.

As the time of year is at hand when people are arranging to leave town for the summer months the following cases may be of interest to those physicians who are liable to be consulted by their patients regarding the propriety of visiting one or other of the many springs which abound in California. It not infrequently happens that too little attention is given to the fitness of individual cases to hydro-therapy, and consequently harm is done to the patient and also to the reputation of the particular spa which he chanced to select, so that others who would receive benefit are deterred by their friend's misfortune from availing themselves of the treatment. The popular idea that the surroundings at the various resorts are responsible for all improvement, and that although the baths may fail to relieve yet they never will do any harm, is extremely unfortunate. At least two things should be impressed upon those seeking advice: (1) that hydro-therapy is not adapted to all cases, (2) that the temperature and method of administration are of much greater importance than any salts contained in the water. This knowledge would prevent many undesirable cases from going to the sanatoria, and might also bring to reason many of the guests who, in a desire to be thorough or "get their money's worth," drink too much of the water or indulge in too frequent or prolonged immersion. The cases mentioned tonight are only examples of one of the groups that require exclusion from the baths or very careful supervision during their administration; it is not always possible to tell from physical examination the condition of a man's arteries, because the peripheral vessels may be comparatively healthy while the coronaries and splanchnics are seriously diseased, and therefore in all patients after middle life the first baths should only be given in the presence of an expert medical attendant who is capable of estimating their influence upon the balance between cardiac strength and arterial resistance.

Case 1. A gentleman, aged 58, for nearly three years had been subject to radiating substernal pain that was readily induced by exertion, such as climbing seven or eight steps of a stair, especially if the exertion were undertaken soon after meals. Some time ago, while living at a summer resort where there were hot mineral springs, he commenced a series of baths, and it is only to the effect of these that I wish to call attention. The water came from the ground at a temperature of 140 Fahr., and contained a variety of salts, the most abundant being sodium carbonate, sodium bicarbonate, silica, and a trace of calcium. As I was spending part of my vacation at the same place I had an opportunity of observing him daily, and watching the effects of the baths. In addition to the water consumed before and between meals, the patient was instructed to drink eight ounces of it hot when he went into his bath, and another eight ounces as he was lying in the cooling-room afterwards. The bath consisted of complete immersion, with the exception of the head, in the mineral water that was easily kept at a temperature of between 103 and 104 Fahr. by allowing the hot water to flow in continuously; the time limit was from ten to fifteen minutes, and after the first eight minutes light friction was commenced over the entire body. Upon getting into the bath the patient found the warmth very agreeable, but when about seven minutes had elapsed, he experienced a sensation of fullness behind the sternum to which he did not attach any importance, and made no mention of the fact. The pain so increased during the rubbing that at the expiration of other three minutes the suffering was so great that he could hardly get out of the bath even with assistance, and had to sit down until sufficiently recovered before walking into the cooling-room, a feat that could only be accomplished by resting three or four times on the way. Here he lay down upon the cot, but the slight increase in pressure, consequent upon assuming the horizontal position, caused the pain to return, so that it was fully twenty minutes later before he could recline with his head and shoulders supported upon six or seven pillows. Next day the resident physician told him not to take any water before enter-

*Read before the San Francisco County Medical Society, March 7, 1916.

ing the bath, and also accompanied him and noted the pulse from the moment of immersion; otherwise the conditions were the same as formerly. At the end of eight minutes the sensation of fullness began to arrive, and simultaneously the pulse rose from 82 to 115. He was immediately removed from the bath, but the exertion of being dried and walking not more than twenty feet induced such severe pain that the patient had to sit down for several minutes before he could attempt to reach the cooling-room, where the former experience with regard to inability to maintain the horizontal position was repeated. The patient was made to understand the gravity of the condition, but he was one of those men who are more or less attracted to medicine from the fact of having several friends in the profession and having been round about hospitals both for business and charitable purposes, so that he became as much interested in his own case as the resident physician and myself, and decided to continue the baths. It would be superfluous for me to give a detailed account of each bath; they were given every day for ten days, and every other day for fourteen days; the temperature was generally 102 Fahr., and was never allowed to go above 103 F.; the total time of immersion never being allowed to exceed ten minutes. Pain was always readily induced upon the slightest effort after emerging from the bath, but not to such an extent as with the higher temperature, and a similar result obtained with diminished severity until the end of the treatment, although the maximum temperature was reduced to 101 Fahr. During the attacks the patient found that deep inspirations materially aided in diminishing their duration and intensity. The benefit is probably due to the fact that by this means there is an increase in the negative intra-thoracic pressure so that the blood from all the veins, including that of the coronary sinus, flows more freely into the right auricle, and also from the right to the left side of the heart. Naturally this both relieves strain and improves the coronary circulation.

No pressure records were made during the paroxysms, but for some time before the treatment was commenced the systolic pressure was generally between 165 and 170. At the end of four weeks the patient's condition had materially improved, although this was probably the result of observing a careful dietary, exercise, and drinking the water to promote elimination as prescribed by the resident physician.

The effect of the warm mineral baths was to me both extremely interesting and instructive, because it was my first opportunity of personally observing the onset of anginal attacks under such conditions, although I had on many occasions advised patients to avoid high temperatures, and to make their baths of as short duration as possible, rather from dread of possible syncope than from expectation of breast pain. That immersion in warm water should be followed by vascular dilatation and faintness seemed perfectly natural, but the production of angina pain was more difficult to understand.

In my wards at the San Francisco Hospital Dr. Kretsinger, at my request, made a series of observations on the effects of hot baths on blood pressure. The pressure was taken before the bath, with the patient in a reclining position, and again after total immersion of the body and limbs in water at 105 Fahr. for fifteen minutes, and the different readings compared. In five out of six cases there was a slight rise of 5 mm. to 7 mm. in systolic pressure, only one remaining unchanged. In all of them the bath was followed by a marked fall in diastolic pressure, generally to the extent of twenty-five or thirty mm. This of course means a great increase of pulse pressure or force of the cardiac systole, also of the heart load. One case was a man over 70 years of age suffering from well-marked arterio-sclerosis, but who was not subject to anginal attacks. Before the bath his systolic pressure was 160 mm. and his diastolic 90 mm.; at the end of fifteen minutes' immersion in the hot water systolic pressure remained unchanged, but the diastolic had dropped to 70 mm., so that the pulse pressure was increased from 70 mm. to 90 mm.

If the general assumption be correct that the *normal* heart load corresponds to fifty per cent. of the *diastolic pressure*, then this patient had an overload of twenty-seven per cent. before the bath, which was increased to seventy-eight per cent. of the diastolic pressure after fifteen minutes' immersion. As baths at this temperature are associated with marked acceleration of the pulse rate it is evident that the work of the heart must have been materially increased. The case observed in my ward were few in number, but their object was to note *possible* therapeutic effects or accidents against which precautions should be taken rather than to make statistics; hence even one was sufficient to establish the necessity for observing the influence of the baths not only on the systolic pressure, but also upon the diastolic pressure, pulse pressure and heart load at the beginning of a course of hydrotherapy.

Otfried Mueller, in 1902, published his observations on "The Physiological Action of Baths." The following is a summary of his conclusions: "(1) Baths with a temperature below the indifferent zone (33-35 degrees C.; 91.4-95 F.), produce an increased blood pressure, lasting throughout the bath, with a decrease in the pulse rate. (2) Baths with the water at a temperature above the indifferent zone to approximately 40 degrees C. (104 F.), produce, after a short initial rise, a lowering of the blood pressure to or below the normal; this lowering is then followed by a second increase in the pressure; below 37 C. (98.6 F.), in this group of baths the pulse rate is lowered, above this point it is increased. (3) Baths over 40 C. (104 F.), produce an increase in pressure lasting throughout the entire bath, with an increase of the pulse rate." (Forchheimer, "Therapeusis of Internal Diseases," vol. 3, page 618.)

Briefly stated, this patient's baths were given in the following manner: The temperature of the water upon entering the bath was 102 F., and when he was completely immersed it was rapidly raised to 104 F. by the addition of water that flowed in copiously at a temperature of 145 degrees. On the first occasion he remained for fifteen minutes, but subsequently the temperature was maintained as nearly as possible at 102 F., never being permitted to rise above 103 F., and the time was shortened to ten minutes. The case would therefore fall into the second of Mueller's groups, in which there is a short initial rise of pressure succeeded by a fall, and then a second increase in the pressure accompanied by an increase in the pulse rate. This is at variance with the usual physiological experience that pulse rate is inversely as the pressure; that whenever vascular dilatation takes place there is an

acceleration of the pulse, and that when the vessels contract there is a slowing, as if it were a purposeful endeavor on the part of the heart by its own exertions to maintain an approximately constant pressure. It is impossible to say the extent to which the second rise in pressure is due to a reciprocal compensatory action between the splanchnic and peripheral circulations, because sometimes these dilate simultaneously as during digestion, at other times the one is opposed to the other, and it is perfectly possible that during a bath, where the stimulus is peripheral and does not demand any functional activity on the part of the abdominal viscera, there may be a contraction in the vessels of the splanchnic area in an endeavor to avoid the fall in pressure consequent upon dilatation of the peripheral vessels. On the other hand, as already mentioned, the augmentation of the heart's work resulting from the combination of pulse acceleration and increased heart load is sufficient to induce an anginal attack without the production of any marked rise in arterial systolic pressure. Since these are the symptoms that, according to Mueller, arise in the healthy person who is given such baths, it can be readily understood that in the arterio-sclerotic patient, particularly if the splanchnic vessels be involved, the pressure may be easily disturbed to such an extent as to strain the heart and produce the most acute suffering. In such a case as that just reported the patient should not be allowed to continue the baths in the hope that he will become habituated to them; on the contrary, either they should be discontinued or the temperature and time of immersion reduced until he is absolutely free from distress. One paroxysm predisposes to another, it does not protect against it; indeed it would seem that when once a by-path has been established in the cord through which viscero-sensory impulses are diffused to the nerves of ordinary sensation, each attack makes the transmission more easy.

This second case contains a warning as probably it is an example of a hot bath producing heart overload in an arterio-sclerotic patient, from the effects of which he never recovered. Unfortunately I am not able to give you pressure data, as the patient came under observation in 1906 shortly after the San Francisco disaster, in which many of us not only lost our apparatus, but had difficulty in replacing it. This gentleman was also 58 years of age, and consulted me on account of a typical radiating anginal pain. It is not necessary for the present purpose to give a detailed account of the case, but simply to state that under treatment he recovered so far that instead of being unable to walk one block without stopping on account of pain, he could walk more than a mile without resting, gained twenty pounds in weight, made a long pleasure tour through Canada and Alaska, as well as three round trips between San Francisco and New York, without suffering any inconvenience. Subsequently he came to me from some "Springs," where he had been spending a short holiday with friends who advised him to take a hot mineral bath for the purpose of breaking up a cold; while in the bath he experienced a sudden attack of his former cardiac oppression and pain. He never afterward regained his former condition of health; but became subject to attacks of cardiac asthma, from which he died several months later.

Most hydro-therapists have agreed that the changes in pressure depend upon the temperature of the water much more than upon any action of the salts in solution, yet there cannot be any doubt that these have some influence, although our knowledge on this point goes very little beyond the general statement that the salts, especially the chloride, by process of endosmosis, reach the upper layers of the cutis to which they attract water from the deeper tissues. This abstraction of water stimulates the terminations of the cutaneous nerves, and, reflexly, the cardiac and vaso-motor centres. There is no absorption of salts through the skin into the circulation. Much greater importance is attached to the presence of carbon dioxide. This has been worked out especially in relation to the Nauheim Baths, and Mueller has found that in the artificial Nauheim Baths, while the *pressure* depends more upon the temperature of the water than upon the carbon dioxide present, on the other hand, these two factors participate almost equally in the production of changes in the *pulse rate*. It must be remembered that Nauheim Baths are not in the same category as those taken by the gentlemen whose cases have been narrated; these are generally given at temperatures varying from 83° to 91° F., and consequently fall into Mueller's first group. At one time it was believed and taught that the carbon dioxide produced a prolonged dilatation of the peripheral vessels, and therefore a lowering of pressure and lightening of the heart's work. This, however, is erroneous, and it has been shown that in the cool Nauheim Bath there is a rise in pressure due to contraction of the peripheral vessels which is not compensated by the splanchnic vessels, although these dilate to a considerable extent; that the ventricular output is increased, and that there is a greater and more rapid flow of blood through the peripheral vessels producing a pink color of the skin. As the pulse rate is slowed the increased output must be due to a more complete systole diminishing the amount of residual blood usually remaining in the ventricle, for it must be remembered that normally the ventricle does not empty itself with each contraction but that, in such animals as the dog, with a pulse rate of 90, about one-third of the ventricular contents remains after each systole. The effect of the Nauheim Baths is supposed to be due to the fact that carbon dioxide, accumulated on the body surface, retards the conduction of heat from the body to the water, and thus prevents the rapid cooling that takes place in plain water. In the carbon dioxide bath the peripheral nerves receive the usual stimulation from the application of cold, but the body temperature being longer maintained the result is as if the patient had a cold and warm bath simultaneously.

It is evident that the Nauheim Bath by simultaneously contracting the peripheral vessels and increasing the cardiac output produces increased work for the heart, that the temperature and amount of carbon dioxide being capable of regulation, the amount of this work can be graduated to the heart's capabilities, and finally that the adaptability of cases to the treatment will depend on the responsive power of the myocardium, rather than on the nature of the lesion. For the same reason it may be expected that such cases of arterio-sclerosis, kidney

involvement, or high blood pressure as are deemed suitable to hydrotherapeutic measures will frequently do better in the saline baths at a temperature of 94 F. to 96 F., than in those containing carbon dioxide, and at either a higher or lower temperature.

In conclusion, may I be permitted to again emphasize the fact that warm baths may be dangerous to patients suffering from arterio-sclerosis, because the higher temperature tends to increase the heart load by causing a slight rise in the systolic pressure but a marked fall in the diastolic, which, together with the acceleration of the pulse rate may result in serious augmentation of the strain upon the heart muscle.

In giving baths, therefore, the attendant must note the diastolic as well as the systolic pressure, and figure out the heart load, and not content himself by observing that the systolic pressure is not very much increased.

Discussion.

Dr. H. D'Arcy Power: A subject like this presents so many aspects that it is very difficult to discuss it. So many factors occur in all cases of high blood pressure that it is difficult to seek out those that are responsible for the immediate condition or its secondary symptoms.

We have forms due to hypertension alone, in which arteriosclerotic changes have not yet occurred, and whose causation is to be sought in toxic or autotoxic irritation, to altered internal secretions, or possible direct cerebral stimulus. In others there is a distinct laying down of fibrous tissue that at all times occludes a certain portion of the peripheral vessels and produces conditions not so amenable to treatment.

When we consider the action of a remedy like hot water or stimulating baths, in every case it must be determined, if possible, which of these conditions is chiefly present, and act accordingly. More important, it seems to me, in all questions of high blood pressure, is not the immediate effect of certain measures, as hot baths or the use of the X-ray, but what the final result is. Let us assume that after several weeks of the bath treatment the patient has a reduced arterial pressure, we still must ask which of many factors has been responsible? He has probably been taken away from business cares and given rest. How much has that reduced the blood pressure and how much the bath? His bowels have been attended to and his kidneys kept flushed, and his diet radically changed.

I have been recently watching the use of thermal penetration in reducing blood pressure in a business man, who is away from his business worries and is on dietetic treatment. He has had a fall in his blood pressure, but I am not convinced on that account.

As to Dr. Kerr's two particular cases, they are very interesting, particularly the first case with the anginal symptoms. It occurs to me that the change in the pulse rate (85-115) may have been more responsible for the anginal attack than the change in pressure. I have experienced the presence of anginal pain when the pulse rate has reached a certain frequency, and I also know by personal experiment that deep inspirations are capable of checking the pain. Whether this is due in all cases to an alteration of intrathoracic pressure or the movement of gas in the bowel is often a question.

The whole subject is one of extreme interest. I know of nothing at the present time that is more important than the study of these high pressure cases and the factors that induce them, but it will need hundreds of just such careful studies as Dr. Kerr has given before we shall be able to obtain clear indications for therapy. I think it is a very dangerous thing to take any step in high blood pressure which will suddenly increase the heart rate or reduce the ventricular pressure; in all such cases we have to go very slowly in using therapeutic measures.

Dr. Kerr (closing discussion): I did not mean to discuss the therapeutic value of baths in the treatment of arteriosclerosis, that would require about a book. All I wanted to do was to call attention to the danger which exists in arteriosclerotics going to mineral springs. We all know that they take these baths without supervision, and trouble is bound to occur. As I mentioned, at the beginning of the feeling of oppression the pulse rate may rise from 85 to 115—a sudden jump. Another point I wanted to emphasize is the change in systolic pressure, there may be none, or it may be slight. In those other patients in my ward the systolic pressure never increased above 5 mm., but there was a big fall in the diastolic: 30 to 35, and in one case 40. This, taken with the acceleration of the pulse, means an immense increase in the heart load. Of course in the case of the old arteriosclerotic, the overload of about 75 after the bath and greatly increased pulse made a terrific amount of work for the heart to do.

The first thing noticed is that the indiscriminate use of baths in angina is to be avoided. In the next place we must not be guided by systolic pressure—the difference in diastolic pressure and pulse rate means a great deal more.

Cases like these explain to us why in many cases of arteriosclerosis we find attacks of angina pectoris coming on with very little increase of systolic pressure. You find on examination nothing abnormal in the systolic pressure, yet the patient is suffering considerably. In those cases you will generally find a low diastolic pressure which shows that the balance has been disturbed.

Dr. Saxton Pope: I have seen several cases of angina made worse by hot baths. I know of a gentleman having had angina pains lasting only two or three weeks. The blood pressure was 175, and he was addicted to hot baths. After taking a very hot bath one night—the temperature was probably 110—he went to bed with slight pain in the precordium. The next day he was found dead in bed, with his light going and his spectacles on his nose. The autopsy showed coronary thrombosis.

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TUBERCULIN THERAPY: ITS PRINCIPLES, LIMITATIONS AND INDICATIONS.*

By WALTER C. KLOTZ, M. D., Los Angeles.

In the absence of a real cure for tuberculosis tuberculin therapy remains an important adjuvant to the long and expensive general hygienic treatment. It is only natural and at the same time justifiable that anything that may be of even the slightest help to the patient should be employed, provided no harm is done. While at the present time there is little probability of tuberculin being used as recklessly and in as large doses as during the period shortly following Koch's original communication,—a period referred to by Brown aptly as the "tuberculin terror," the fact remains that, in an endeavor to help, the general and indiscriminate use of tuberculin can and actually does do harm in some cases. It would seem timely, therefore, to point out briefly some of its limitations and dangers.

If the various hypotheses as to the action of tuberculin be left out of consideration and the actual pathologic changes constituting the tuberculin reaction be kept in view constantly, these dangers will be avoided more readily while the indications and contra-indications for its therapeutic use would appear perfectly obvious.

We are still in doubt as to the nature of tuberculin sensitiveness. We do not know what biological mechanism brings it about. That it is an anaphylactic phenomenon seems fairly certain. On the other hand it appears more complex than the sensitiveness usually induced by the injection of a foreign proteid. True tuberculin sensitiveness has not been produced in non-tuberculous organisms by previous treatment with tuberculin. It is true that Baldwin (1), Krause (2), Lewis (3) and Austrian (4), among others, were able to induce anaphylactic shock by means of large doses of tuberculin in non-tuberculous animals by previously treating them with products of tubercle bacilli. But the anaphylactic sensitiveness produced in such animals lacked some of the essential characteristics of true tuberculin reactivity. As Baldwin has pointed out (5), the actual formation of tubercle tissue and tubercle cells seems necessary in order to bring about a condition of allergie or reactivity to products of tubercle bacilli. In fact, from what we now know in regard to tuberculosis, the changes in the tissue cells at the site of the tuberculous lesions apparently constitute the essential features of all tuberculous processes.

When we set out to gather the few facts we know about tuberculin and its effects, we find as Lewis (6) has put it recently in a very clear analysis of the subject, that "relatively very little that is essential has been added to the fundamental facts of the pathology of the tuberculin reaction, which formed the justification for the therapeutic use of tuberculin." In other words, our knowledge of tuberculin on a strictly pathological basis has not advanced beyond that obtained from Koch's original classical experiments. All further knowledge in regard to tuberculin rests upon clinical, if not empirical, observations.

The essential effect of tuberculin is the focal reaction or the inflammatory changes that take place in and about all existing tuberculous foci, whether they are located in the lungs, the skin or other organs. These inflammatory changes consist in congestion or, if severe enough, necrosis and softening. It is important to bear in mind constantly that this focal or organ reaction is the real reaction; this much is based upon established anatomic facts. All other phenomena associated with the reaction; local and general symptoms, as well as changes in the objective physical signs, are merely the result of the central focal reaction with chemical cellular changes.

If the tuberculous lesion is located in the lungs a given dose of tuberculin administered subcutaneously will cause increased congestion about the disease focus. If the dose be large enough there may be necrosis and softening with possible extension of the process, either through adjacent tissues or even by rupture into blood vessels, these changes being analogous to the pathologic changes occurring in the course of the disease as a result of the tuberculo-protein derived from the tubercle bacilli. The changes accompanying focal reaction may be detected by alterations in the physical signs: increased dullness, voice and breath changes and an increase in rales; in other words, signs of increased moisture. Coincident with changes in physical signs there may be an increase of local symptoms: cough, expectoration, streaked sputum or pleurisy. The cellular changes constituting the focal reaction may also bring about an increase in general symptoms: rise of temperature, increased pulse rate, headache, malaise, pains in the body and extremities, loss of appetite and digestive disturbances. Occasionally, however, such general symptoms may remain absent. In other words, focal reaction with congestion may occur, but no rise of temperature and no subjective symptoms are noted, just as clinically, softening and cavity formation may take place without general symptoms of toxemia. It is this very feature that makes tuberculosis as a disease so insidious and calls for such caution in the use of tuberculin.

The above applies to a single, not minimal, dose of tuberculin. If beginning with small doses the injections are repeated at intervals, with gradually increasing doses, a tolerance to tuberculin is established so that in time even very large doses no longer cause a reaction. This tuberculin tolerance is not strictly an immunity in the biologic sense since so far as can be determined no antibodies to tuberculin are formed.

In what way this tolerance is established we do not know. Like tuberculin reactivity it must depend necessarily upon changes in the cells at the site of the lesion and of the body cells in general, so that they no longer react to the given dose of tuberculin:—*focal tolerance*. This tolerance exists normally in the non-tuberculous individual because there are no tubercle cells present that are capable of bringing about an allergic condition. The probable effect of focal tuberculin tolerance, therefore, is to put the individual in a similar condition in

* Read before a meeting of the Southern California Medical Society, held at Los Angeles, December 2, 1915.

which he reacts, so far as clinical symptoms are concerned, as if there were no anatomic lesions present. The lesions themselves, however, may continue to exist, or even to progress, as tuberculin tolerance does not confer immunity against tubercle bacilli or prevent their invasion into the tissues either from within or without the body.

On the other hand, the subsidence of toxic symptoms in some cases, as tuberculin tolerance becomes increased, would seem to indicate that a tolerance is established also for the tuberculo-proteins produced at the site of the lesion from the living tubercle bacilli. If this were true it is conceivable that the cells of the body are enabled to take care of the tubercle bacilli, just as they take care of saprophytes, or of diphtheria bacilli after the diphtheria toxins have been neutralized by the antitoxin. Furthermore, the cells and the organism as a whole being less burdened with part of the products of the tubercle bacillus, can attain a normal condition and acquire increased resistance, so as to put up a more effectual fight against the infection itself.

The principal object of tuberculin therapy being to establish focal tuberculin tolerance and to avoid appreciable focal reaction and its harmful effects, the indications and contra-indications for tuberculin therapy must be based upon an estimation of the degree of reactivity of the tissues' cells. In this respect every case is a law unto itself and must be judged upon its own merits. It is impossible to formulate the indications and contra-indications according to any fixed scheme. The individual case must be studied carefully, before making a decision, and the symptoms, physical signs and clinical history carefully considered, aided by a clinical sixth sense that can come only through long experience and observation.

The extent and intensity of the lesion are not necessarily an indication, as slight, early lesions may bring about more severe reactions than older more extensive lesions, even those with cavity formation. This applies especially to chronic, fibrous or encapsulated foci. In cases with recent extension and in those with evident softening;—the result of intense tuberculoprotein action, it must be irrational to give tuberculin and thereby increase the focal toxemia. For even though the toxins liberated from the living tubercle bacilli at the site of the lesion may not be identical with those of the tuberculin, they must include those of tuberculin, no matter what others may be produced in addition. It must be irrational for the same reason to give tuberculin in cases with marked toxemia,—high or fairly high elevation of temperature and sevcre constitutional symptoms.

On pathologic grounds tuberculin is contra-indicated also in cases with recent or existing hemoptysis on account of the danger of increasing necrosis and ulceration.

On clinical grounds it would seem that a moderate or mild persistent temperature is not in itself necessarily a contra-indication to tuberculin, and in some such cases this symptom has been seen to subside following the use of tuberculin,—possibly because a focal tolerance for some of the tuberculotoxins has helped the natural resistive forces of the body to overcome the others, in the manner I have endeavored to explain above. In giving tuberculin to such cases, however, it is important that they be kept under careful observation and that the dosage be controlled cautiously.

The ideal cases for tuberculin are those without toxemia, in good general condition, without constitutional symptoms and in which the signs would indicate that the lesions have remained stationary for some time. These are the cases also in which the stimulation of the tissue cells through mild focal congestion may hasten encapsulation and healing, besides establishing tuberculin tolerance.

In the administration of tuberculin it must be considered axiomatic that there can be no absolute dosage. The effect of any bacterial toxin depends upon the resistance or tolerance of the individual. Even with standardized preparations the initial dose, the rate of increase and the highest dose must be measured to the individual case. The initial dose should be made small enough to exclude all possibility of clinical reaction. In determining this, we must be guided again by the clinical picture. The various biologic tests do not offer a safe guide and are of help only in corroborating clinical signs. The quantitative cutaneous test first suggested and applied for this purpose by White (7) will point out hypersensitiveness of the skin to tuberculin and is at least a safe guide in indicating when the initial dose should be smaller than usual, even though this index of cutaneous sensitiveness does not necessarily bear a direct relation to the degree of focal reactivity. The process of repair and healing in tuberculosis is essentially a localized one, concerning chiefly the fixed tissue cells at the site of the lesion. Immunity in tuberculosis is cellular rather than humoral. It has been known for a long time that certain specific amboceptors existed in the blood of tuberculous subjects,—such substances as precipitins, agglutinins, opsonins, and substances binding complement in the presence of tuberculous antigens. Each one has been studied carefully with a view to determining its relation to the course of the disease, but the results of all this work have been most variable and contradictory,—simply interesting, but of little clinical significance. The serologic tests are therefore not to be depended upon as guides in determining dosage of tuberculin.

The interval of dosage should be made long enough to allow any delayed reaction to develop and subside before giving the next dose. In order to detect possible focal reactions physical examinations should be made frequently about twenty-four hours after the injection when any resulting hyperaemia would have reached its height. This is usually practicable only in institutions. In the case of ambulatory patients, in dispensary or private practice it should be done as frequently as possible. Careful auscultation of known existing tuberculous areas would be sufficient in most cases. A careful control of subjective symptoms, as well as of the temperature curve, will usually indicate existing reaction in the clinical sense. At the same time distinct focal reaction has occurred with even minimal doses of tuberculin and without any rise of temperature. There are cases in which the

nerve centres are evidently not irritable to the tuberculous toxins and in which extensive softening may take place without being detected if reliance is placed solely upon the temperature curve and general symptoms.

The highest or maximum dose should be the largest dose that the given individual can tolerate without causing clinical manifestations and without regard to any fixed arbitrary maximum dose. Some authors recommend as high as one thousand milligrammes and this dose can be reached safely by many individuals. Others again cannot take more than one or ten milligrammes, while some reach the limit of tolerance at even .001 or .0001 milligrammes. Throughout the whole course of tuberculin treatment individualization of dosage must be the essential feature. The greatest error and the greatest source of danger lies in giving a fixed initial dose in every case, following a regular scale of increase until an arbitrary maximum dose has been reached, with an idea that the sooner the patient may be made to finish the course, the sooner will the desired benefit be received,—that is, a desired tuberculin tolerance established.

It is hardly necessary to enter here into a description of technic as to administration or making dilutions. It might be in place, however, to warn against the use of stock serial dilutions. These may have been in stock for variable periods of time and undergone deterioration. If then the next higher dilution is of more recent stock and a fresher preparation, it may possess relatively higher potency than the one previously used and the patient receive a greater increase in dosage than intended. Different dilutions may also have been prepared from different stock solutions, varying only slightly as to strength, but this slight difference may become relatively much greater, according to the dilution.

While innumerable preparations of tuberculin have been devised by different workers from time to time, there is an absence of all proof that they possess any advantage whatever over the older forms of tuberculin of Koch:—Old Tuberculin (O. T.) and the New Tuberculin, Bacillen Emulsion (B. E.) or the Buillion Filtrate of Denys (B. F.) also made according to an open formula like the preparations of Koch. By combining these standard preparations all the substances of the bacillary bodies and of the cultural fluids may be made use of.

Different preparations vary only as to the relative amounts of tuberculin they contain. Some preparations only appear milder in their effects because larger doses must be given in order to obtain the same amount of tuberculin. Some of them have undoubtedly been exploited for commercial purposes as would be indicated by the exorbitant prices at which they are marketed. As the Germans say: "Tuberculin is Tuberculin" and any desired effects it can have must come necessarily through the focal reaction and consequent focal tolerance. This, as we have seen, is the only action that tuberculin can produce, and tuberculin is the only substance that can produce it. Hence, if any preparation contains tuberculin at all, it will produce this effect only, and conversely any substance causing focal reaction is necessarily tuberculin or must contain tuberculin, regardless of under what name it may be exploited. If no reaction at all is produced there can be no therapeutic effect. The aim in tuberculin therapy is to produce the least degree of reaction beyond no reaction at all, but not sufficient reaction to make it clinically manifest, and the distinction between minimal *"anatomical cellular reaction"* and a so-called *"clinical reaction"* must be kept in mind.

SUMMARY.

To summarize, in selected cases tuberculin is of help in producing tolerance to tuberculous toxines and in this way we may increase the resistance of the individual and afford a certain amount of protection in the course of subsequent exacerbations or recurrences. This protection, is, however, limited necessarily, because tuberculin tolerance only protects against a part of the tuberculo-proteins and not against all the toxins which are liberated from or by the tubercle bacilli in the course of the disease: If this latter were only true, tuberculin would be much more efficacious as a weapon against tuberculosis. On the other hand, if some of the tuberculo-proteins liberated from the living tubercle bacilli were not identical with those liberated from tuberculin in the course of the focal reaction, tuberculin would be of no value at all, as focal tuberculin tolerance would not protect the body against anything it was in danger of.

Finally let me repeat that tuberculin cannot and does not confer immunity against infection with tubercle bacilli either as preventive measure or in the course of disease. In fact, according to Austrian's experimental work (8), animals previously treated with tuberculin were more susceptible to subsequent inoculations with living tubercle bacilli than were untreated control animals. In order to draw conclusions as to results obtained from tuberculin therapy it is not safe to accept figures from tabulated statistics, even though the cases treated with tuberculin and the untreated controls may have been selected and observed under similar conditions. Here again the only safe guide is a careful clinical study of individual cases.

CONCLUSIONS:

1. On a pathological basis our knowledge of tuberculin is limited to the phenomenon of the focal reaction, which is the essential feature of the tuberculin reaction.

2. The basis for indications and contraindications for tuberculin therapy is an estimation of the degree of reactivity of the tissues at the site of tuberculous lesions. This can be determined only by a careful clinical study of each case.

3. The principal object of tuberculin therapy is to establish tuberculin tolerance. Tuberculin tolerance is not permanent and the protection offered by it is limited.

4. The various biologic tests are too variable to serve as safe guides for dosage in tuberculin therapy.

5. The dosage in tuberculin therapy is not and cannot be absolute, but must be determined for each individual case, according to the clinical picture.

6. Different preparations of tuberculin differ only as to their tuberculin content.

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SIMPLE TREATMENT OF FRACTURE OF INFERIOR MAXILLA.*

By EDMUND BUTLER, M. D., San Francisco.

A few general remarks before taking up the treatment.

Fractures of the inferior maxilla make up about four per cent. of all fractures. The nasal bones are the most frequently fractured bones of the face, and fracture of the maxilla is next in frequency. It occurs more often in adult males between the ages of twenty and forty years. More often single, increases in frequency from the condyles forward, the usual location being in the region of the cuspid teeth and mental foraminae.

Etiology. Fracture usually results from direct violence, and that violence is most often a blow from a fist.

This fracture is practically always compounded. The location and direction are determined by direction and force of blow, structure of bone, condition of teeth, position of jaw, muscular relaxation, and presence or absence of something between the teeth.

Symptoms are the same as in other fractures, plus difficult swallowing, drooling, and interference with phonation.

Diagnosis as a rule is made by the patient before consulting a physician. The entire bone, excepting condyles and coronoid processes, is palpable, hence ease of diagnosis by inspection and palpation; nevertheless, radiographs should always be taken.

The prognosis is favorable, nonunion and serious complications being infrequent if treatment is appropriate.

The treatment of this fracture by the medical profession has never been satisfactory. The multiplicity of splints and immobilizing apparatus suggests the unreliability of any one method.

Treatment by external dressings only, such as the four-tailed bandage, modified Barton bandage, or old H cardboard splint, is inadeqaute because of impossibility of maintaining accurate reduction for any length of time.

Treatment by special splints combining external apparatus with intra-oral apparatus, such as Matas and Kingsley splints, is faulty, as apposition and immobilization are very difficult to maintain and the comfort of the patient is a minus quantity. The ability to chew soft foods which is claimed for these splints when they are properly applied, does not exist; the patient drools continuously and swallows with difficulty.

The intradental splints and cap splints are ideal, but their proper application can only be had by cooperation with the dentist. The cap splint gives better satisfaction than the intradental, because of the ease of cleansing and ability to open the mouth.

Wiring the teeth of the inferior maxilla together on either side of the fracture causes the teeth to loosen. The Hammond wire splint with its buccal and lingual arms is difficult to apply, the teeth loosen as a result of inability to distribute the tension, and therefore the function of the splint is defeated.

Any open procedures—wiring, plating or stapling—cannot be too strenuously condemned. Occasionally a fragment of bone preventing reduction may have to be removed or its position changed, and sometimes sequestra have to be removed. In edentulous jaws the fracture sometimes has to be wired, but this is exceptional. Open procedures increase the chances of necrosis and infection, the incision often interferes with the distribution of the facial nerve, and frequently the ultimate result is poor. An unsightly scar and a deformity due to excessive callus and loss of bone often persist.

The simple wiring of teeth of the inferior maxilla to corresponding teeth of the superior maxilla is a practical, efficient procedure which is easy of application and requires no special instruments or training. It is suitable in practically all cases where the teeth are present.

Anesthesia is not as a rule required. External dressings are unnecessary. Any pliable tenacious wire of appropriate size may be used (iron, copper, bronze or silver). Angle's bands are often used by dentists, but are not as easily applied as wire. The corresponding teeth of three corresponding positions at least should be included.

The care of the mouth, as in all injuries to this region, must be thorough. Frequent irrigations with some such solution as dilute Dobell's, boric acid or peroxide, should be given. The buccal surfaces of the teeth must be brushed or cleansed with gauze.

Diet should consist of milk and egg, crushed fruits, puree of vegetables and scraped meats, introduced through a tube passed posterior to the posterior molars.

The wires should be left in place ten to fifteen days, then support by an external bandage for a short time after the wires are removed.

The danger from vomiting is inconsiderable if the stomach is empty when wires are applied, if anesthesia is used.

This method is used by dentists almost universally, but by very, very few physicians. Dental textbooks describe the wiring in detail and advocate its use. Medical textbooks as a rule mention the procedure.

In conclusion, this method has in its favor:

* Read before the Cooper Clinical Society.

First—It is suitable to almost all fractures in all locations and is very easy of application.

Second—Perfect occlusion of the teeth is insured.

Third—Absolute rest of the injured parts tends to decrease the chances of infection and necrosis.

Fourth—The period of disability is shortened.

Fifth—The nutrition of the patient need not suffer, if proper instructions are given as to preparation of food.

Sixth—The comfort of the patient is obvious.

Seventh—Cases of fracture of the inferior maxilla cease to be a constant worry to the physician.

FRACTURE OF THE BASE OF SKULL; PRESENTATION OF PATIENT.*

By PAUL R. WALTERS, M. D., Dinuba.

I am presenting to-night a paper on "Fracture of the Base of the Skull." It is a report of a case which occurred in my practice nearly two years ago. It presents many interesting facts, chief of which is the severity of the case, with the recovery of the patient. To the neurologist it probably would be more interesting because of the various nerve conditions which developed from the injury. The history previous to the accident is as follows:

The boy was about five and one-half years of age; he was well; had had the usual diseases of childhood, however, from which he made a full recovery. On Sunday, June 14, 1914, Mr. B., his wife and two children, with several friends, started for the mountains for a day's outing. Mr. B. was driving his car, with his wife seated beside him in the front, and the two children sitting on the rear seat. They missed the regular road at Eshom Valley and got on a side road at about one mile from the Osborne ranch. There was a sharp turn in the road; just before arriving at this turn, the steering gear of the car struck a protruding rock in the middle of the road which locked it. Mr. B. not knowing that his steering gear was broken, did not apply his brakes, but continued forward. Realizing that the car was about to plunge over the cliff, Mrs. B. screamed and jumped out. The car continued over the cliff, carrying the other three occupants with it. The fall was a straight drop of between forty and fifty feet. In the fall the car tipped and the three fell direct to the creek bottom, the car clearing them as it fell, landing upon its side in the water. The screams of Mrs. B. brought back to the site of the accident, their friends who had preceded them. When they arrived Mr. B. and the little girl had gotten up, dazed and bewildered. The little boy remained upon his back, bleeding from the mouth and nose.

One of their friends, Mr. F., seeing the child not breathing, thought he was dead, and taking some water from the creek, threw it in his face and began the performance of artificial respiration. In a few moments they said the child began to breathe and gasp for breath. They carried the child about a mile to the Osborne ranch, and telephoned to Dinuba for help. The accident occurred about 9:30 o'clock in the morning. I received the message of the accident about 10:30 but was delayed about one-half hour in getting emergency dressings ready, as I was told there were several people killed and injured. I arrived at the Osborne ranch about 12:30, just three hours after the accident occurred and one and one-half hours after being called, and found the child as follows:

The child was unconscious, with anxious parents and friends looking on. There was a small amount of blood flowing from the nose and mouth, some clotted blood around the orifices. He was vomiting small clots of blood.

Head: There was a small swelling and a bruise upon the position of the posterior fontanelle; no depressions and no evidence of fracture of the vault. There were no other wounds or fractures upon the head.

Nose: There was no fracture of the bones of the nose or the cartilages, but there was a small amount of blood coming from the nostrils.

Mouth: The roof was injected, ecchymotic, and there were lacerations at the mucous membrane just anterior to the uvula. The uvula was swollen and injected with blood clots adherent. The jaw bones were normal. There were no fractures. No teeth were loose or knocked out. The tongue was swollen and discolored. The eyes were normal. They reacted to light. The conjunctiva were clear in both eyes.

I could not see the drum head in either ear owing to inefficient facilities. However, there was evidence of rupture, as both drum heads were bleeding. I was unable to discover spinal fluid; this may, however, have come out before my arrival.

Neck: The neck seemed to be normal; there were no bruises or discolorations. The vertebrae were not fractured or dislocated.

There were no bruises or lacerations on the chest; no fractures or dislocations of the ribs or vertebrae, as far as I could ascertain.

The heart was in a normal position beating about sixty-five to the minute and very forcibly. There were no valvular murmurs. The pulse, 65, full, strong and regular.

Lungs: There were crepitant and sub-crepitant rales scattered throughout both lungs. This I think was due to inspired hemorrhage; and respirations were of the Cheyne-Stokes variety and very bad. The temperature was 97.5° F.

Abdomen: There were no fractures or lacerations and as far as I could discover no injuries of the internal organs. There were no ruptures of the bladder and the urine was voided involuntarily, and did not contain blood.

Legs and thighs: There were no injuries or bruises and no fractures.

Arms and hands were normal.

The skin of the boy was relaxed, somewhat clammy and cyanotic. The reflexes were somewhat minus but still present and they were about the same on both sides.

My diagnosis at this time was fracture of the base of the skull. I was unable to determine which of the fossae was involved and my prognosis was bad.

I decided that it was impossible to move the child and as there was no medical aid nearer than Dinuba, a distance of thirty-five miles, I decided to remain for a short time with the patient, and immediately sent to Dinuba for ice, drugs and instruments. On the afternoon of the same day, the child reacted from the shock and the symptoms of concussion began to subside to be replaced by symptoms of pressure and fracture. The pulse came up to between 80 and 90 and finally on that same day to 100. The temperature rose to 103°; respirations became worse and of the C.-S. variety. The skin became more cyanotic and muscles of the left eyeball were paralyzed and the pupil dilated. The conjunctivae became red and injected. The left side of the body was paralyzed. About 8 o'clock in the evening, the messenger which had been sent to Dinuba, returned and we immediately placed ice about the child's head, stimulated with atropine and caffeine.

On June 15, the next day, the child seemed somewhat better and stimulants were administered: whisky by the mouth, as he could swallow and nutrient enemas.

On June 16th, the second day after the accident,

* Read before the Tulare County Medical Society, February, 1916.

about 3 o'clock in the morning, the child became quite cyanotic; the C.-S. breathing returned and became quite marked. The pulse ran up to 170, they were quite feeble and things looked very bad. I gave atropine and caffeine, external heat, with very little results. The child looked like he was dying, so I gave intravenously, eight ounces of normal salt solution. Within a very few minutes the cyanosis entirely cleared up, the C.-S. respiration was replaced by a regular respiration which was very fast and shallow. The pulse became stronger and slower. The change that took place was noticed by several mountaineer people who were present and it was quite remarkable. On this day Battle sign appeared, which as we know, is a bluish discoloration over the mastoid process on the left side, which was indicative of a fracture in the posterior fossa. The child had a good day. The bowels moved. The stools were liquid, which I think was due to the fact that we were feeding some by the rectum. The urine was voided involuntarily about every eight or ten hours. The child was able to swallow liquids if fed slowly. The child was still unconscious.

June 17th—This day was about the same as the day previous.

June 18th—At 2 o'clock in the morning the pulse went up to 160 and respirations again began of the C.-S. variety; cyanosis again became marked and the child vomited. His condition began to look bad again, and this time I immediately used a normal salt solution intravenously. About six ounces were injected into the median basilic vein of the right arm. The results after the normal salt injection at this time were just as remarkable as on the 16th.

June 19 and 20 were two good days. The respirations were regular, at times running between 18 and 30. The pulse ran between 90 and 120. The bowels moved and the urine was voided. The child was still unconscious. They fed liquid food and he received his whisky and very little drug stimulation. The left side was still paralyzed. At this time the eyes began to roll about, not simultaneously but separately. The muscles of the left eyeball being partially paralyzed with only the external rectus and inferior oblique giving motion.

June 21—About 2 o'clock in the morning the pulse got up again to 150, weak; the respirations again began of the C.-S. variety and cyanosis again occurred but not quite as bad as in the previous attack. This time I gave normal salt solution subcutaneously, with very good results. On this day we had retention of the urine. The bladder failed to expel its contents and we had to resort to the use of the catheter. The child was somewhat constipated also, and we used high enemas.

June 22, 23, 24 and 25 were good days. The pulse ran between 80 and 110. The temperature betwen 100° and 101°. One important fact that I have failed to mention is that dicroticism and cardiac arrythmia appeared at my first examination and continued throughout the case, until the boy was well able to get about, which was in the neighborhood of about four and one-half months. This was a most annoying symptom to me.

On June 26 another spell of cyanosis and the C.-S. breathing returned and this time normal salt solution was given, subcutaneously, with very good results. This I think was the last time I used the normal salt solution.

On June 27 the urine was voided without the use of the catheter for the first time since the 21st of June, a period of six days.

From June 28 to July 3, the boy began to improve; the pulse ran from 75 to 80, it was still irregular as mentioned before, but not as marked; the respirations ran from 18 to 30 with more regularity but not as deep as normal. The temperature ran from 98 2/5 to 100. The paralysis was still present and unconsciousness remained. The child on this day was remover from the mountains to his home in Dinuba. He was transported upon a willow bough bed, arranged in the back of a large touring car, well padded and slung on straps. All the way down, the nurse held his shoulders while I held the head to prevent undue weight upon the base of the skull. The arrival home caused no change in the symptoms whatever.

From July 3 to July 10 the pulse came down to about the normal rate, still somewhat irregular. The temperature was practically normal. The paralysis still remained and the child was still unconscious. This unconsciousness remained until the seventh week after the accident, at which time the child began to mutter. He was unable to talk intelligently until about three months after the accident. At the fourth month after the accident he was able to stand upon his feet. At four and one-half months from the time of the accident he began to walk gradually. He would stumble and fall, but tried hard and finally was able to walk.

Rhomberg sign was present which I tested for at this time, and this sign remained present up to a few months ago. Before the accident, the child was right-handed, since the accident he is left-handed.

Nine months after the accident occurred the child suffered from a double suppurative otitis media, since which time he has been somewhat deaf in the right ear.

His present condition: His heart and lungs are normal, his weight is about normal for the child of his age, he walks fairly well, a little uncertainty in his step; his grip is practically the same in both hands. The pupils react to light and accommodation. Rhomberg sign practically negative. There is some deafness in the right ear. There is a facial paralysis of the left side. The mental condition of the child is normal. He is not bad tempered, sleeps and eats well, and goes to school.

My treatment of the child consisted in absolute quiet; ice continually about the head; nourishing food in liquid enemas and in liquid form by the mouth; whisky to help keep up strength, and occasionally atropine and caffeine, hypodermically. Open air treatment.

He was carried out during the day in the open air where he remained until darkness came. This I think helped to obtain pure air for his respiratory apparatus. Owing to the inaccessibility to laboratory, etc., I was unable to make analysis of the spinal fluid, blood and other secretions.

My final diagnosis in this case was a fracture of the posterior fossa, middle fossa and possibly of the anterior fossa. My reasons are as follows:

On the second or third day after the accident, Battle sign appeared, which is almost pathognomic of the fracture of the posterior third. Facial paralysis was indicative of pressure in the stylo mastoid foramen through which the seventh nerve emerges from the skull. My reason for thinking a fracture existed in the anterior fossa was the paralysis of all the muscles of the left orbit excepting the external rectus and the inferior oblique, a fracture in the anterior fossa pressing upon nerves which innervate these muscles, would certainly give these symptoms.

I might mention the beneficial results following the administration of normal salt solution; the full restoration of the paralyzed muscles; the peculiar condition of change from the use of the right hand before the accident to the left hand after the accident, and the restoration of the mental condition to normal.

My treatment in this case was absolutely conservative, there was nothing radical done.

I now present my little patient for your examination.

ROENTGEN TREATMENT OF GOITRE.*

By HOWARD E. RUGGLES, M. D., San Francisco.
From the Diagnostic Section of St. Luke's Clinical Club.

Until we know more about the primary causes of goitre and have a working classification based on etiology, treatment must necessarily be more or less empirical and correspondingly unsatisfactory. Under present conditions it is not surprising that all treatments fail to secure the desired results in 10% to 20% of the cases. Rational treatment demands the removal of the cause and with our present information we cannot say whether the cause lies in stimuli from the central nervous system as Crile believes; or in a disturbed balance in the emdocrine system due perhaps to an infectious process such as T. B.; to a developmental defect such as hyperplastic thymus or to a hypo- or hyperfunction of one of the other members of the chain.

Probably the best classification we have at present is that of the Mayos based on the pathology of their operative material.

The objection to it is that it necessarily cannot include the pathology of the other glands of the system which is at least as important as that of the thyroids themselves. However, by means of it the pathologists and clinicians have been able to correlate their findings in 80% of their cases.

Their scheme is very simple, they have two divisions, toxic and atoxic and these are each subdivided into hyperplastic and non-hyperplastic. Of these the most important are the non-hyperplastic atoxic, or simple goitres, which comprise 43.9% of all the cases. They are characterized by atrophic parenchyma, decreased function and a chronic course. Twenty-four per cent. of these degenerate into the second type, the non-hyperplastic toxic, which compose 13.3% of the cases, and with these the goitre appears on an average at the age of 22, and becomes toxic at the age of 36½ years. In these cases exophthalmos is rare.

Third, hyperplastic atoxic, which was represented in only .3% of the cases is of little importance. Most important of all is the hyperplastic toxic, or the exophthalmic type, which made up 42.5% of the cases. In these the goitre appeared at the age of 32, and toxic symptoms at 32.9 years. The curve of toxicity reaches its height toward the end of the first year and the process subsides in from two to four years, leaving traces in the way of damaged hearts, blood vessels and nerve tissues.

There are many other classifications, viz., exophthalmic, formes frustes, thymic, vagotonic, sympathicotonic, etc., but the Mayo scheme is probably the best.

Surgeons will not agree that toxic goitres should be treated medically when they have statistics proving 70% to 80% of cures as compared with 20% to 50% of cures by medical means, but as Roentgen rays come into more general use in these cases and similar statistics can be compiled by the Roentgenologists it will probably be found that their figures will not be far below those of the surgeon, while their mortality will be considerably lower.

The pathology of the exophthalmic type is essentially a primary parenchymatous hypertrophy and hyperplasia; an increased amount of functioning parenchyma associated with increased absorption, frequently associated with hyperplasia of the thymus, especially in the fatal cases. Here, if ever, we have a condition peculiarly suited to Roentgen therapy—glandular tissues and especially vascular actively functioning ones are particularly susceptible to radio-activity and the thymus is violently so. We have an agent which can accomplish all that surgery can do—not all at one blow it is true, but gradually and none the less surely.

It will be objected that during the time necessary for treatment, toxic material is still being circulated and continuing the remote damage to heart, vessels and nerves. Time alone will show whether the objection is sound. It would seem as though the rapid improvement which occurs objectively in rayed patients, at times almost magically, would indicate an immediate diminution in the toxemia. They sleep better, feel better,—tremor and tachycardia diminish, they are not as nervous as before and they soon begin to put on weight.

It is further objected that radiation causes fibrosis so that subsequent operation is made more difficult. On the contrary, thickening of capsule and obliterative endarteritis should make it easier.

Just as sudden shock will at times start up an exophthalmos in a patient who was previously taking care of an excess of thyroid; so often a course of radiation will be all that is necessary to bring about the reverse process and carry him back over the critical point so that he is again able to neutralize his hyper secretion.

The literature shows a large number of reports of small series of cases treated with the rays with no attempt to classify the cases according to type and here is a point that hinders the Roentgenologist considerably in his study of this field—he has time for little more than a cursory history of the patient so that he must depend on the clinician who refers the case for the proper classification and study of the subsequent course of the patient. It means that the two men must work in closer touch.

Last year G. Schwartz, of the first medical clinic in Vienna, reported 40 cases in which after radiation the nervous symptoms always disappeared and the tachycardia nearly always. Two-thirds of his patients showed gain in weight, one-half regression of exophthalmos and one-third diminution in tumor.

Falta in his book on internal secretions says that he has seen several good results from radiation lately with disappearance of glycosuria, diarrhea and tremor and increase in weight.

Stoney reports 41 cases, 14 cured, 22 much improved.

Fisher reports 12 cases, seven as cured for two years, and five improved.

Case says that the response to treatment depends on rapidity of development of goitre,—the shorter its duration the better the result.

Kienböck, last spring in an article calling attention to the possibility of early hyper-reaction to ordinary dosage of rays and advocating moderate dosage until the patient has, in a measure, been standardized, concludes with the following quotation from Belot:

* Read before the San Francisco County Medical Society, November 16, 1915.

"The X-rays give results in Basedow's disease equal to any treatment, even surgery itself. In the severe cases, the rays bring improvement and even a cure—one causes almost a true resurrection."

And this from Nagelschmidt: "No case of Basedow's should be operated on unless it has had energetic treatment with the rays first. Even when the indication for operation is clear—at the very worst the patient is put in better general condition by the rays. There is no doubt that the mortality of surgical treatment will be greatly reduced by previous Roentgenization.

The technic consists of an exposure of from a quarter to a third of an erythema dose, of hard rays through a 3 m.m. aluminum filter. If no reaction occurs the dose is cautiously increased until regression of symptoms occurs. Some patients at fairly heavy doses will develop sympathetic symptoms of nausea, malaise, temperature for three to four days followed by improvement immediately or during the next week. The improvement lasts 10 days to two weeks and then treatment is repeated. Each time they gain a little more and the beneficial results seem to continue for some time after treatment is stopped. Patients should not be accepted for a course of less than three months—at times a year will be necessary to secure results.

In the past year and a half we have had 24 cases, 10 pursued treatment for from three months to 11 months. Without exception they are improved as regards nervousness, sweating, tremor, sleeplessness, and weight.

One still complains of tachycardia at times.

Three showed great improvement in exophthalmos. At any rate the results are sufficiently encouraging to warrant wider application of the method and more careful study of the cases.

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Discussion.

Dr. W. W. Boardman: I should like to agree with the first speaker regarding the attitude of the surgeons. Most of them insist upon operating on all their cases of fibroids, so that, up to the present, very few of them filter through for X-ray treatment. At the Stanford clinic we have had two cases and in these two, the results have been very satisfactory. However, the patients have not been followed up long enough for any definite conclusions to be drawn. The technic used there follows that of the Freiburg school, using the Coolidge tube, the hard filtered rays and the cross-fire method. I feel convinced that the X-ray offers great possibilities in gynecologic work, especially in patients about the age of forty. The younger patients, I should feel inclined to leave to the surgeon. I fear also to take the cases in which the diagnosis is not altogether certain. We have all seen cases on the operating table which have demonstrated mistakes in pelvic diagnosis. It is certainly very important to carefully watch the clinical course during treatment. Any unexpected happening should call for immediate investigation.

I believe that radiotherapy will be used more and more in gynecologic work and the fact that men of wide surgical experience abroad have practically abandoned surgery and adopted radiotherapy argues very strongly for this method. I can certainly agree with Dr. Ruggles as to the excellent results obtained in hyperthyroidism with the X-ray. I have seen several cases in the last few years in which there has been very decided temporary improvement. I say temporary because we have not as yet followed these cases long enough to know that it is permanent. I believe it is very important in treating these patients to put them at rest perfectly in the hospital. Also to search for and remove all points of focal infection—tonsils, teeth, sinuses, etc., as recently emphasized by Billings and Rosenow.

Dr. Saxton Pope: I have seen two cases, one where the treatment was given for menorrhagia and the other for fibroid. Both were greatly helped. After treatment of a year, I could not find the fibroid. The menorrhagia stopped completely. The treatment was very satisfactory to her, and it seems particularly applicable to that type of case.

Dr. Kreutzmann: I am very glad to hear of somebody else who now starts in to take that sort of treatment. I must say that I, personally, was at first (several years ago) a kind of disbeliever, but from what I have seen personally, and from study, I have become thoroughly convinced of the great possibility of the radioactive agencies. I believe that the wonderful curative action of all the different radio systems, of which the X-ray is only one, will revolutionize the practice of medicine. As Dr. Boardman has told you, not only in Germany, but in France, men of wonderful ability as operators—men like Krönig, one of the most skilful operators you could imagine; men like Doederlein and Bumm—have laid aside the knife and employ rays therapy. I had a very peculiar experience in Berlin. The chief of the Roentgen department, speaking of the question of fibroid of the uterus, said: "We have no interest in that any more. That is settled. We want now to make new investigations. What we are interested in now is treating malignant tumors with X-rays." Some men there who have conscience enough to know what they are doing, and who have observed enough, use radioactive substances not only in non-operative cases of carcinoma of the uterus, but in cases favorable for operation. They say that in five years we will compare the results. I have seen, myself, a case of carcinoma of the uterus where the result was marvelous. Professor Doederlein said to me, when he showed me a number of cases: "If anybody told me what I am telling you now, I would not believe him. I would have to see it myself."

Dr. Ruggles: Dr. Hyman has asked about treatment of thymus cases. The thymic type will respond more readily than any of the others. The clinical side I have not been able to keep in very close touch with. The cases with which I have had the most success, have been referred as thymic patients. It is reasonable to suppose that they would react more easily than any others, because of the susceptibility of the thymus to radiation.

At Johns Hopkins, Barker and Halsted are enthusiastic about the Roentgen treatment of thyroid cases. Garré reported several years ago that 95% of the fatal cases of Graves disease showed persistent thymus at autopsy. Cases of hyperthyroidism, in which symptoms persisted after operation, were greatly improved when thymectomy was done subsequently. Impressed by this observation, they started radiation on several cases, which had not been benefited by operation. The improvement was so marked, that they have con-

tinued the treatment on their subsequent cases.

In the matter of future possibilities it is improvement in technic and apparatus which will give improvement in results. The Coolidge tube is a great help. That is a tube in which the current depends not upon a variable amount of gas in the tube, but upon the incandescence of a filament which can be maintained at a given point indefinitely.

The General Electric Company is now working on a tube of this type which will back up a 20" spark. The gamma radiation of radium corresponds roughly to a 15" or 17" spark. With the perfection of such a tube, the results of Roentgen treatment in all fields should be tremendously increased.

THE CONSERVATIVE TREATMENT OF FRACTURES OF THE LONG BONES AND OF WOUNDS COMPLICATING THEM—A PAPER IN ORTHOPEDIC SURGERY.

By JAMES T. WATKINS, M. D., F. A. C. S.,
San Francisco.

(Continued from Page 237, June Issue, 1916)

PHYSIOLOGIC USE WITHOUT OVERWEIGHTING.

All surgeons are agreed that physiologic use is the best agent in assisting to make union solid. With fractures of the lower extremity it is good practice to let the patient walk as early as possible with a protecting brace or splint such as a Thomas caliper cut so long that the patient's heel just clears the ground. In certain cases a Hessing or a plaster of paris sheath splint may be employed. Other cases of malunion may be consequent upon a too imperfect reduction of a fracture or upon failure to maintain the parts in good position after a fracture has been reduced. Usually these commoner forms of malunion may be prevented by anticipating them in the setting.

It is always to be remembered that tenderness at the seat of a fracture means the callus is still soft and yielding. Not infrequently the patient complains that the deformity is growing worse.

If the callus will yield in one direction under one set of strains, it can be made to yield in another and opposite direction under another set of strains. Therefore not infrequently by either appropriate splinting or balancing or by actually re-breaking and again setting a limb, the deformity consequent upon malunion may be overcome.

THE CLAVICLE.

Fractures of the clavicle are often the result of direct violence, the blow being usually a shattering one. I have had occasion to cut down on a number of them, frequently to find that instead of a clean break I had to do with three fragments. Unless firm union is obtained such fractures may become the cause of much discomfort. As a rule patients recover with some deformity. The immediate end of treatment is to keep the shoulder well back and out. This assures proper alignment. The Sayre adhesive plaster dressing can be made to accomplish this. It is not comfortable, however. By far the most comfortable dressing is a combined plaster of paris cuirass and shoulder spica.

THE HUMERUS.

For fractures of either the anatomical or the sugical neck of the humerus Bigelow's dictum issued in 1844, "Pad in the axilla. Arm at the side. Hand in a sling," may usually be accepted. Especially is this so in old persons where the fracture is impacted. In those instances where the X-ray shows marked deformity, the upper fragment being displaced outward, an attempt at manipulative reduction should be made. To do this an assistant should make vigorous traction downward on the hand, then, without relaxing his pull, outward; and finally upward. The pull should be sufficient to separate the fragments. The surgeon then with one hand in the axilla and one on the arm can cause the rough surfaces to engage. Care should be taken that when they do this the lower fragment is rotated out sufficiently to permit the hand to be placed on the back of the head.

In accordance with the surgical principle that a fracture near a joint should be immobilized in that position which is ordinarily attained with the greatest difficulty, where there is a fracture of the sort just considered one would naturally fix the arm in the extreme of abduction and elevation with moderate external rotation. This is Dr. Whitman's procedure and was the one employed heretofore by the writer. Mr. Jones advises, however, that after the bones have engaged the arm should be gently brought to the side and immobilized in the usual way.

Fracture of the shaft of the humerus may be complicated by injury to the musculo-spiral nerve, or by the inclusion of this nerve in the callus. In such an event to operate is the only alternative. I have had only one such case. The most efficient dressing I have employed was a plaster of paris spica applied to the shoulder, the arm and the forearm, the latter being flexed to a right angle. While the splint is being applied, downward traction should be maintained on the arm by means of a loop of bandage passed around the flexed forearm and held by the operator's foot so as to prevent overriding of the fragments.

THE ELBOW JOINT.

Fractures of the olecranon should be immobilized in full extension. With this exception all injuries about the elbow joint should be put up in supination and extreme flexion.

In this way the coronoid process is made to fill up the coronoid fossa, thus keeping it clear of callus, while the tendon of the triceps forms a sling about the broken parts holding them together. The flexion is maintained by an adhesive strap surrounding forearm and arm and the limb is suspended from the patient's neck by a bandage round the wrist.

I have in the past two years treated nine elbow fractures in this way with functionally perfect results. All except one were in children. In one other case flexion occurred at the site of fracture. Here an incision was made over the external condyle and the gloved finger introduced into the wound and behind the fracture. In this way the

broken ends were held in place until the joint had been flexed. In place of hyper-flexion one may put the hand up in hyper-extension. We have the authority of W. W. Keen and of Robert Jones for it that this method is fraught with much greater danger of ankylosis to the patient.

THE FOREARM.

In children because of the presence of a strong periosteal hinge it is frequently possible, even when both bones are broken, to straighten the arm and obtain ideal alignment and apposition. In adults, on the other hand, in the presence of fracture of both bones, ideal apposition and alignment frequently cannot be obtained without resort to open operation. In that event it is usually the fragments of the radius which resist replacement. For some unexplained reason attempts at plating this bone are frequently followed by delayed union. It is advisable therefore to adjust the fracture and then close the wound and apply an external splint rather than to employ an internal splint.

When the attempt is made to set the fracture by manipulation, the anatomical facts must be borne in mind that the ulna is straight and subcutaneous throughout its length, whereas the radius curves about it. Therefore anterior and posterior valve-shaped splints should be so applied that the ulna is supported throughout its length, while no pressure at all is made on the middle of the shaft of the radius. The anterior and posterior valves are united by adhesive straps at wrist and elbow.

Splinting for fracture involving a single bone of the forearm constitutes an exception to the rule for employing valve-shaped splints. In this case the forearm is placed in supination since in that position the shafts of the two bones are most widely separated, and anterior and posterior board splints applied. These splints must be wider than the arm. The anterior extends from the flexure of the elbow to the middle of the palm where a roller bandage is strapped to it to enable the fingers to curl around it. The posteror board extends from the point of the elbow to the wrist. Both boards are suitably padded and then fitted in place by three adhesive straps, one at either end and one in the middle. Here advantage is taken of the fact that a flat board will touch a cylindrical limb only along a single line to force the anterior and posterior muscle bellies into the interval between the two bones, thus crowding them apart, avoiding the danger of malunion and indirectly fixing the fragments of the broken bone. The adhesive straps can be drawn tight without danger to the circulation so long as the boards are wider transversely than the patient's arm.

The essentials to be borne in mind in treating Colles' fracture are:

1, That there shall be a true and complete reduction of the deformity;

2, That the fingers shall be left free from the first and motion of them encouraged;

3, That passive motion at the wrist should be avoided while the callus is soft and sensitive.

If reduction is complete almost any one of the many splints devised for the purpose will maintain it. Massage, gentle at first, should be begun early and should be vigorous by the end of the third week. When the splints are removed the wrist should be supported by circular adhesive strapping for the space of three inches. The danger with Colles' fracture is that there will be too much and too long splinting.

THE CARPUS.

Only fracture of the carpal scaphoid deserves special mention here. There is noticed stiffening and weakness of the fingers. It is found that there is inability to dorsiflex the wrist and there is an area of acute sensitiveness to pressure in the "anatomical snuffbox."

The indication for treatment is to dorsiflex the wrist and immobilize. If a displaced fragment of the bone prevents this, try to press it back into place and then dorsiflex. If this is not successful cut down on the fragment, remove it and then dorsiflex.

Immobilize on an anterior splint so constructed as to maintain dorsiflexion and permit of free motion of the fingers.

FRACTURES OF THE LOWER EXTREMITY.

Fractures of the femoral neck. It should be borne in mind that a so-called traumatic coxa vara, or bending of the femoral neck, is the most frequent sequel following upon an "intra capsular fracture." The functional consequences of such a change are marked limitation of abduction and great added strain to the weakened bone. Treatment should be directed toward preventing the occurrence of this traumatic coxa vara by maintaining, if it be present, or reconstituting, if it be diminished, the normal angle made by the femoral neck with the shaft.

Recalling in this relation the fundamental principle underlying the treatment of all fractures near joints, namely, that the parts shall be immobilized in the extreme of that motion which is ordinarily most difficult of attainment, it becomes at once apparent that the limb should be immobilized in maximum abduction. To do this proceed as follows: Anesthetize the patient and place upon the sacral support ready for applying plaster of paris. Abduct the sound limb to the limit of motion. Next, supporting the affected limb, carefully abduct it, using gentle but positive force, till it makes an angle with the body equal to that made by its fellow.

Maintaining these positions apply plaster of paris in a double spica from the toes to the axillae. Reenforce it by a stick extending from one foot to the other, its ends being incorporated in the plaster of paris splint. In this way the fragments of the femoral neck are both pressed together and their alignment assured by the integrity of the pubofemoral ligament which by this manoeuver is made tense.

Where because of threatened hypostatic pneumonia, or for other cause, it is not expedient to keep the patient lying down the same result may

be sought in the following way first advocated by Dr. Maxwell of Keokuk, Iowa:

1. Make a 25-pound pulley traction downward in the direction of the limb, and 2, a 15-pound pull obliquely upward and outward over the side of the bed. The resultant diagonal of force of these two tractions will be represented by a pull in the direction of the femoral neck. In this way the capsule is drawn out as a tense sleeve about the fractured ends, maintaining them in proper alignment.

After applying this dressing the patient may be sat up in bed without disturbing the setting.

The writer has used this method successfully in the case of an old lady 89 years of age.

FRACTURES OF THE SHAFT OF THE FEMUR.

These are best conservatively treated by constant traction as exposited in the Thomas bed brace. This consists of a padded ring which encircles the thigh and from which depend two metal rods which meet ten or twelve inches below the patient's foot. The ring is crowded upward against the patient's perineum and ischial tuberosity while a steady unremitting pull is made on the limb by adhesive or other form of tractions, the lower or free ends of which are attached to the bottom of the splint.

Sheath splints of plaster of paris or of sheet iron properly padded then extend posteriorly from gluteal fold to lower third of leg, and anteriorly from groin to above patella. They are swung between the uprights of the splint by means of slings of bandage material. As muscle spasm relaxes the tractions become loose and have to be taken up. The nurse or attendant must be instructed to wipe the ring from time to time with a soapy rag and to move the skin under it every two hours for the first day or two that it is worn.

When there is shortening it may be pulled out under deep anesthesia, using a watch tackle, that is, strong pulleys, until the leg is as long as its fellow, and then all the lengthening so gained must be maintained by applying the splint just described.

After six weeks the patient may be got up, wearing a walking caliper made from the same splint by cutting it one-fourth inch too long for the leg and fitting the ends into round sockets in the sole of the shoe just in front of the heel. In this way the patient's heel is kept off the ground and he has the advantage of exercise while still unable to put his weight on his injured limb.

The same apparatus may be used in treating fractures of the upper three-fourths of the tibia and fibula. Fractures involving both bones in the lower third of the leg are exceedingly intractable. They are best treated by open operation.

Because of the frequency with which nonunion occurs in this region it is well to see after doing an operative reposition whether the fractured ends will not remain engaged firmly enough to permit of the application of a cast without the introduction of an internal splint.

POTTS' FRACTURE.

It is not my intention now to discuss the causation nor the pathology of Potts' fracture beyond saying that there is a break of the fibula some distance above the joint, while the tibia may have sustained any one of several injuries all resulting in the same thing, namely, a break or tear of that portion of it to which are attached the internal lateral ligaments of the ankle joint. There is sometimes also a tearing loose of the anterior border of the lower end of the tibia with a dropping down of the fragment. Unless sought for and corrected when present this last named derangement, by interfering with dorsal flexion, will nullify what would otherwise have been a perfect result.

The deformity consequent upon these derangements is a displacement outward of the foot on the leg. Further, there is usually a displacement backward of the foot on the leg. When this occurs you will notice that the anterior articular edge of the tibia, that is, its lower border in front, is unduly prominent. Occasionally the foot is displaced forward. But this derangement is rare. What now is our mechanical problem and how are we going to meet it?

The problem is to straighten out the overlapping in the fractured fibula at the outer side of the leg, to bring the torn ends of the tibia at the inner side of the ankle into closest apposition, to reduce the subluxation usually backward (though sometimes forward) of the foot on the leg and—remembering our rule—to immobilize the joint in that position which it finds most difficult to assume.

Assuming that I have to do with the usual form of Potts' fracture—that in which the foot is dislocated backward on the leg—I proceed as follows: An ordinary kitchen roller towel is passed around the leg opposite the lower end of the tibia. I place my foot in the loop of this towel. In this way the limb is definitely anchored at a given distance from the floor.

Next, a second roller towel is passed around my shoulders and behind the patient's heel. You will at once perceive that by merely straightening my body I shall be able, whenever I wish to do so, to exert a tremendous forward pull on the backwardly dislocated foot. At the same time my hands are free to guide the foot during the manipulation.

Now the superior articular surface of the astragalus is narrowest at its posterior part; a fact of which we should take advantage in our efforts at reduction.

The following is my actual maneuver:

1. Place my roller towels about the member in the manner indicated.

2. Flex the knee and thereby relax the pull of the tendo Achilles.

3. Grasping the foot with the hands pull it down into full plantar flexion. This will bring the narrowest part of my astragalus into the tibio-fibular mortice.

4. While maintaining plantar flexion I straighten my body. This will cause the roller towels to make the foot to skid forward upon the narrow posterior superior articular surface of the astragalus. And the subluxation backward is seen to be overcome.

5. Still maintaining the knee flexed carry the foot into full dorsal flexion. In this way, should an anterior fragment of the lower end of tibia have dropped down it will be forced back into place.

6. Without losing any dorsal flexion, the whole foot is turned or twisted inward to the limit of supination.

7. While maintaining the posture obtained by the preceding maneuver, a thick layer of cotton wadding is applied, and over it a plaster of paris cast. Correction is maintained while the plaster is setting.

8. As soon as the plaster has set firmly it is good surgery to split the cast throughout its length. I do this not for the reason set down in the text-books, namely, fear of gangrene, but because I believe that in the course of our studies of the cause and treatment of ununited fractures swelling has been definitely proven to be an important factor in the normal process of repair of bone.

Your patient may be got up on crutches and wearing his cast in three weeks. At this time the cast may be so loose that you will have to renew it without, however, altering the position of your foot.

At the end of six weeks you can have the inner side of the sole and heel of his shoe raised one-fourth inch and flanged inward, and the shank of shoe blocked solid.

If the patient be heavy, an outside leg iron, working in a round socket just in front of the heel, should be supplied. A strap about the ankle pulls the foot over toward this leg iron and into a position of supination. This shoe, or shoe and iron, should be worn for three or four months longer.

If this precaution is not taken what at first appears to be a good result will gradually, through stretching of the soft callus, be transformed into a painful pronated foot.

Though not germane to the general heading of this paper, fractures of the heel would appear to be so common among industrial accidents that a note concerning them is appended here.

The treatment given those fractures of the heel which have come before me for review has invariably failed to prevent a crippling deformity.

The cause of such fractures is a fall from a height where the patient lands squarely on his feet in a standing position.

The lesion is a crushing of the os calcis, usually with involvement of the sub-astragaloid joint and sometimes of the astragalus. It may be so severe that if the bone is cut down upon the fragments will resemble a bag of pebbles. In appearance the heel is widened from side to side and shortened from above downward.

Manifestly the worst possible treatment would be prolonged immobilization in full dorsal flexion. Extreme dorsal flexion being always associated with abduction. But this would seem to be precisely the treatment usually employed.

The object of appropriate treatment is to return the os calcis to its original shape and to re-establish normal motion in the sub-astragaloid joint.

This can be attempted in the following way:

(1) Relax the pressure on the heel by plantar flexing the foot, and maintain this plantar flexion to the end of treatment.

(2) Pull the heel down by passing a sound from side to side in front of the Achilles tendon and making traction upon it. Make sure of pronation and supination by rocking it from side to side to the limits of normal motion while making traction.

(3) Place the foot on its side on a sand sac and with a padded hammer inpact the fragment.

(4) Immobilize in a plaster of paris dressing, the foot being still in plantar flexion.

(5) In a few days, and never later than after two weeks, begin with gentle passive motion in the sense of supination and pronation.

(6) Keep off the foot for three months and resume walking while wearing an appropriate arch support.

As in all fracture work proper massage will hasten recovery.

The foregoing is an outline of the way in which your orthopedist, who is primarily a bone surgeon, views fresh fractures of the long bones and of the principles upon which he bases his treatment.

SOCIETY REPORTS

MARIN COUNTY,

Marin County Medical Society met on Thursday evening, May 12, at the home of Dr. E. J. Hund in San Anselmo. The paper of the evening was by Dr. R. L. Ochsner, on the early diagnosis of tuberculosis. The paper received much discussion.

Among those present were Drs. S. M. Augustine, J. P. Crawford, H. O. Howitt, E. J. Hund, H. O. Hund, W. F. Jones, L. L. Stanley, C. A. Flannagan and E. W. Alexander.

At the close of the meeting refreshments were served.

Respectfully submitted.

O. P. STOWE, Sec.

PLACER COUNTY.

The Placer County Medical Society held its regular meeting in Auburn, Saturday evening, March 25th. Through the courtesy of the Trustees of the Placer Union High School, the Assembly Hall of that building was used as a place of meeting.

The March meeting was a Public Health meeting, and for this reason a special invitation was sent to each member of the local Boards of Health of Placer County, inviting an attendance at the meeting.

Doctor James G. Cumming, director of the Bureau of Communicable Direases of the State Board of Health, read a paper entitled "The Protection of Public Water Supplies with Special Reference to Dysentery and Typhoid Fever." Professor W. B. Herms, of the University of California, who has charge of the special work to be done by the State Board of Health in its campaign against malaria, gave an address illustrated by lantern slides, on "Practical Aspects of Malaria Control."

These papers were discussed by members of the society and visitors.

It is expected that the next meeting will be held in Roseville.

ROBERT A. PEERS, M. D.,
Secretary.

MENDOCINO COUNTY MEDICAL SOCIETY.

At the call of the president, Dr. L. C. Gregory, a meeting of the Mendocino County Medical Society was held at Hotel Cecille, Ukiah, on the evening of the 3d of June.

Invitations to be present had been extended to all

the profession in the county. As the majority of the members had had 60 miles or more of mountain roads to cover, the proceedings were started by a banquet gotten up by the Ukiah members. Before starting upon that most of all important matter—that of supplying fuel for the delicate and superbly regulated mechanism, the human body—an informal and general levee was held in the foyer, giving all of us the privilege of making the acquaintance of our special guest of the evening, the jovial Dr. Gustaf J. Bergener of San Francisco, and I must say it does make a fellow feel good to meet such a man.

The Ukiah members did not wish to allow the coast fraternity to surpass them in hospitality, and I do believe the hostelry had been given carte blanche, which it had utilized to its fullest extent.

In addition to Dr. Bergener, those partaking of the excellent cuisine of this hostelry were: Drs. J. Liftchild, Ukiah; G. A. Woelffel, Willits; G. W. Stout, Ukiah; R. Babcock, Willits; F. C. Piersol, Mendocino; F. G. Gunn, Willits; S. L. Rea, Ukiah; D. R. Smith, Talmage; C. L. Sweet, Elk; H. H. Wolfe, Albion; F. O. Cleland, Ukiah; T. B. Hopkins, Potter Valley; F. McLean Campbell, Fort Bragg; L. C. Gregory, Fort Bragg; O. H. Beckman, Fort Bragg; also Mr. Dominguez, Dr. Bergener's lantern operator, and two Fort Bragg High Schoolers—chips off the president and secretary—the former an embryo M. D., the latter to be developed into an architect. May the sun ever shine brightly upon all of the partakers, and especially so upon those whose guests we were.

After every one had done justice to himself and the food, the president called upon the secretary to say something. The secretary does not recall all he said, but he is sure his remarks could not have spoiled any appetites as those were already satisfied, and he hopes nobody carried away any sore bumps upon their persons. He was followed by Dr. Liftchild, whose after dinner speech will go down into the history of Mendocino County Medical Society gatherings as one of the most mirth-producing remarks that ever hit its professional funny-bone. This was followed by a funny rhyme entitled "A Matter of Dress" by Dr. Woelffel of Willits.

After the banquet came the special feature of the evening by Dr. Bergener, who read a paper on "Gastric Symptoms without Gastric Lesions," which Dr. Bergener's assistant illustrated by X-ray lantern slides. This paper and its scope represents such important and excellent matter that it is impossible for me to even attempt to do it justice in a few words, and therefore I do not even try it.

The Mendocino County fraternity gave Dr. Bergener their sincere vote of thanks.

Dr. L. McLean Campbell, Fort Bragg; Dr. George August Woelffel, Willits; Dr. Judson Liftchild of Ukiah, and Dr. Geo. W. Stout, also of Ukiah, made applications for membership. Their names were sent to Dr. P. M. Jones, the State Secretary, for approval according to the rules.

The next place of meeting will be Fort Bragg.

This meeting was the most successful one of its kind ever held in this county.

OSWALD H. BECKMAN, Secretary.

SAN FRANCISCO COUNTY MEDICAL SOCIETY.

During the month of May, 1916, the following meetings were held:

Section on Medicine.

Tuesday, May 2d.

1. The Use of Emetin.....A. C. Reed
2. Some Aspects of Treatment of Infantile Paralysis.....H. W. Wright

General Meeting; Southern Pacific Hospital Clinical Evening.

Tuesday, May 9th.

1. Stereo-Roentgenology (Illustrated).....E. G. Cambert
2. Interesting Fractures (Illustrated)..J. H. O'Connor, S. J. Gardner and W .B. Coffey
3. Echinococcic Bone Disease; Report of Case (Illustrated).....C. A. Walker
4. Report of 15 Recent Cases of Trichiniasis (Illustrated).....G. R. Carson
5. Report of Case of Hepatic Cirrhosis (?).....J. Wilson Shiels
6. Foreign Bodies of the Eye; Localization; Prognosis (Illustrated).....W. F. Blake
7. Salvarsan and Mercuric Chloride in Lues.....W. T. Cummins

Section on Eye, Ear, Nose and Throat.

Tuesday, May 23d.

1. Presentation of Cases:
   A. Endothelioma of nose treated by Killian operation and X-ray.....H. B. Graham
   B. Traumatic cataract of ten years duration, now absorbing spontaneously.
   C. Report of Case; double-sided optic atrophy; question as to etiology..Hans Barkan
2. Eye, Ear, Nose and Throat in Relation to Diseases of the Thyroid and Thymus .....Hans Lisser
3. Demonstration of Roentgen Plates Illustrating Sinus Disease.

Section on Urology.

Tuesday, May 30th.

1. Hydronephrosis.....R. L. Rigdon
2. Protein Cystin Renal Calculi....C. W. Lippman
3. Late Results of Operation for Hypospadias.....F. Fehleisen
4. Gonococcic Fats in the Complement Fixation Test.....M. Wolff

TRANSACTIONS OF THE SURGICAL SECTION OF THE SAN FRANCISCO COUNTY MEDICAL SOCIETY, MAY 16, 1916; CHAIRMAN, HAROLD BRUNN, M. D.

Reports of a Few Operative Cases and Pathological Specimens.

By GEORGE FRANKLIN SHIELS, M. D., F.R.C.S., Eng., San Francisco.

Gentlemen of the Surgical Section:

By your courtesy I will present four specimens from cases, and a short mention of a fifth case, occurring in my practice during the past six months. They were all in Sonoma county, from the practice of two doctors, and were all cared for in the local sanitarium.

1. Two large gallstones removed from the cystic duct of a woman in the late fifties who had never had any biliary symptoms until the present attack, which was characterized by fever (103° F.), small, thready, rapid pulse, pain, vomiting, very slight icterus, leucocytosis, and an exquisitely tender swelling in the right upper quadrant of the abdomen reaching from just above the level of the umbilicus to the free margin of the ribs, dull on percussion. Diagnosed by Doctors Hays and Thompson as acute suppurative cholecystitis with probable ball valve stone in the cystic duct (note the perfect ball valve facetting of the stones). Diagnosis absolutely confirmed at operation. Result, recovery.

2. Ten small gallstones (note peculiar mulberry surface), nine from the gallbladder, one from the common duct by milking back. Removed from a woman in the late twenties who had had for several years attacks of colic which had passed off, but at last had developed profound jaundice associated with high fever and agonizing colic. Diagnosed by Doctor Hays as a partial obstruction of the common duct by stone. Diagnosis confirmed at operation, the largest of the stones being in the duct. Result, complete return to health.

3. A uterus removed from a young cachectic married woman, twenty-eight years of age, for carcinoma. At the time of the operation the cavity of the body was as large as a base ball, and full of a serosanguinous fluid; the cervix was fungoid and bled easily; at a former operation both tubes and ovaries were removed for double salpingitis, doubtless of gonococcic origin. The case was in the practice of Doctor Thompson, who diagnosed the condition, and confirmed the diagnosis micro-

scopically before I was consulted. Operation followed by recovery, marked increase in weight and sense of wellbeing.

4. An extensive intestinal intussusception removed from a man aged forty, who was suddenly stricken with extreme colicky abdominal pain and nausea followed by profuse vomiting which soon became fecal. The patient developed all the symptoms of complete intestinal obstruction, became enormously distended, and went rapidly into collapse. Doctor Hays made the diagnosis of intussusception superimposed on some former obstructive condition, since the patient a year before had had symptoms of a somewhat similar kind which passed off after the application of hot fomentations and the use of purgatives. He stated that before the distension had taken place, he could make out a sausage-shaped tumor below the umbilicus, and outlined its position before the operation. As you see from the specimen there is every evidence that the condition was a chronic one. Note the ring of fibrous tissue at the entrance of the intussusceptum into the intussuscipiens; this evidently permitted the passage of feces until the bowel suddenly wedged, and complete obstruction occurred. Subsequent to removal a side-to-side anastomosis was made. After going through a most critical postoperative history, the patient recovered completely and is now at work and well.

5. The case of a small boy aged four, who was taken suddenly with "bellyache," fever, vomiting, rapid wiry pulse, and increasing abdominal distension; quickly followed by general exquisite tenderness on palpation over all the quadrants. A tympanitic note was present but not so marked in the right lower quadrant. Doctors Hays and Thompson, after three days' observation, made a diagnosis of general peritonitis due to fulminating appendicitis, at the same time holding in reserve the possibility of tubercular peritonitis. Operation confirmed the diagnosis, demonstrating a general purulent peritonitis due to a gangrenous appendix. The appendix was removed, and free drainage instituted. After a trying and stormy two weeks, the patient now seems to be on the way to recovery.

I now beg a moment to make three points which these cases and specimens have suggested to me.

Firstly. The uterus is a sermon in itself. Years since the adnexa on both sides were removed and a foul, infected, useless, and dangerous organ was left as a menace to the health of the patient, either from inflammatory or malignant changes, in this instance the latter took place. Adding this to many other such cases, an axiom develops; i. e., whenever it is found necessary to remove the Fallopian tube on both sides the functionless and dangerous uterus should under no circumstances be left.

Secondly. These five major operations go to prove that while we may miss the great conveniences of the completely equipped operating room of the metropolitan hospital, still, when we have the assistance of experienced, able, and conscientious doctors and nurses, we may expect just as good results irrespective of what is after all only furniture, and not intrinsically necessary. Hence, it is often needless to put patients of moderate means to the expense of journeys and the shock and anxiety of leaving their own surroundings to go among strangers for the sole reason of our own convenience.

Thirdly. Taken together, these five cases supply a valuable argument against the all-too-prevalent tendency to regard Group Work in hospitals and clinics as absolutely necessary for correct diagnosis, a tendency which reaches its acme in the recent writings of Doctor Richard C. Cabot of Boston. Not one of us can fail to recognize, laud, and use group work whenever available, as it is the very best means of arriving at a true diagnosis; best for the patient, best for the hospitals and clinics, and best for the physician and the surgeon. However, in the very nature of things, group work can never be carried out to the exclusion of intelligent one-man work: witness these cases occurring in a small country town, and every one of them not only diagnosed, but diagnosed to an unusual detailed perfection: remark the intussusception in a middle-aged man, the appendicitis in a four-year-old boy, the pre-operative correct locating of the stones in the biliary cases, all diagnoses of which a surgical teacher or a hospital surgeon might well be proud.

Gentlemen, Doctor Cabot, in his effort to make a really good point, has over-stepped himself, and since he has gone over to yellow journalism under the title "Better Doctoring for Less Money" (the American Magazine, April and May 1916), and has allowed the editor to give him great weight by describing him as follows: "Dr. Cabot is one of the most distinguished physicians in the United States. He is chief of the medical staff in the Mass. General Hospital." Considering this quotation, I say that since he has done this, and openly attempted to belittle the general practitioner in the public eye by practically stating that he cannot fulfil his functions on account of ignorance, Dr. Cabot should be regarded as a menace to the profession, a man whose brilliancy and ability has been clouded by a kakoesis for dangerous popular publicity.

In closing, I am safe to state that the finished diagnostic ability evidenced in Sonoma county will be found just as conspicuous in other small towns in these United States, and often times is as conspicuous by its absence in larger cities, among the rank and file of general practitioners on account of the facility of consultation in puzzling cases.

Aneurysm with Abdominal Symptoms.

By C. W. LIPPMAN, M. D.

In the past twelve months I have seen thirty-eight aneurysms, twenty-seven in the San Francisco Hospital, eleven in my private practice; over half of these were not even suspected; five came with a diagnosis of gastric carcinoma because of haematemesis, loss of weight, and cachexia; many came with a diagnosis of intercostal neuralgia; two came with plaster-casts for chronic arthritis of the vertebrae—a third was about to be referred to an orthopedist for his "rheumatic" symptoms. The reason these are presented at a surgical meeting is because I believe that every chronic abdominal case should have a complete routine examination, including stool examination, fluoroscopy, and Wassermann, before the abdomen is opened. A case in point was Mrs. W., who was sent to me with typical gallbladder symptoms, paroxysms of pain in the right hypochondrium radiating to the right shoulder—attacks came on chiefly at night. I found nothing in the gastro-intestinal tract—missed the aneurysm on my first examination. On a subsequent examination I found a very small area of expansile pulsation at the bend of the arch of the aorta into the descendens. Anti-luetic treatment relieved the pain—the tumor decreased in size.

Note:—The criticism at the time of delivering this paper was that this particular case was an aneurysm with gallstones. The autopsy performed on May 30 showed a small aneurysm in the situation described and no gallstones.

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3. Cleft Palate: Discussion of Operative Technic, with Illustrative Diagrams. Abstract of Paper.

By H. M. SHERMAN, M. D.

The anatomical conditions of cleft palate were briefly mentioned to illustrate the possibilities of the two accepted forms of operation, the Langenbeck and the Lane. Contrary to the statement of others, the Langenbeck technic was declared applicable to all clefts and at all ages of the patient. In general, the writer preferred to wait until the child weighed 15 lbs. He described how, by elastic compressive traction, the maxillae could be approximated to lessen the width of the cleft. He described in detail, with illustrative diagrams, the technic, making points of the splitting of the sides

of the cleft instead of paring them to avoid loss of tissue and to permit both pharyngeal and buccal sutures in the soft palate and uvula. He advised mattress sutures in the flap at the junction of the hard and soft palate and anterior to that place. He advocated ample lateral releasing incisions, made to avoid vessels and nerves and the follicles of unerupted teeth. He advised a waxed tape put around these flaps after their suturing to control the pull of the muscles of the soft palate and prevent the tearing out of sutures. As it was not possible to suture the entire cleft in this way and be sure of a maintenance of the circulation, he restricted this first operation to the posterior half of the palate. Later he closed the anterior part by the Lane method, and the lip was done between these two by a simple method which avoided any notching. He spoke of the disappointments in healing which were sometimes encountered and of the need under these circumstances for secondary operations. He reported satisfactory results by the method, from a cosmetic and also a functional viewpoint. Paper to be printed in full later.

Discussion.

Dr. J. Henry Barbat: I am very glad indeed to have heard Dr. Sherman's paper. I may adopt his method of operation some day, but for the past eight years, ever since I had the pleasure of meeting Mr. Lane, I have done Lane's operation, with a set of instruments which he sent me. I will pass around the needle holder, also his periosteal flap elevator, and last, but not least, one of his most valuable instruments—the little mouth gag, the most satisfactory gag I have ever seen except when the patient has teeth. This is placed in the child's mouth and drawn back, and the little points prevent the thing from slipping. Mr. Lane's knife is a very small article, almost like a cataract knife, but very satisfactory for splitting flaps and making incisions in the palate.

Mr. Lane takes the child, if possible, during the first 24 hours, before it has had time to be badly fed, poorly nourished, and therefore to have its tissues in bad condition for healing. The tissues are almost of the embryonic type and unite readily.

The incisions may or may not extend over the alveolar process, depending upon the width of the cleft.

The oldest child upon whom I operated was a boy of 10, with a cleft palate and hare lip. Naturally I could not touch the alveolar process, but I got a perfectly satisfactory result. If you cut beyond the alveolar process, you sacrifice the milk teeth on one side.

(Description of Lane technic by amplifying Dr. Sherman's diagrams.)

The greatest difficulty I have had is in closing the little hole between the nose and mouth, simply because of my poor technique.

With regard to speech, Mr. Lane states that if the patients are operated upon very early, the probabilities are that they will not have a nasal twang. If allowed to go on until they are able to speak, they will unquestionably have the nasal twang no matter how well you may fix the soft palate. He explains this by saying that the sounding part of the nose is allowed to contract, while if operated on early the nasal fossa remains more open, due to the child breathing through the nose, and the nasal twang is prevented.

In cases where the premaxillary bone projects, he does not endeavor to force it back, but merely brings the lip together over it, and finds this sufficient to force it back in place in a few weeks.

As Mr. Lane says, the children take the anesthetic like milk and the operation like a joke, and after a fortnight, if you look into the child's mouth you can scarcely see where the palate has been denuded.

Dr. C. G. Levison: The Society is to be congratulated on the character of this paper and the manner in which it has been presented. The honesty Dr. Sherman has displayed in telling about his failures is very edifying.

Two points of importance have not been mentioned. One is the anesthetic used and the other is the position of the patient on the operating table.

In considering the age that is most desirable for operation there are several points that in my opinion, have not been sufficiently emphasized, one in particular being that which Lane has brought out in reference to very early operation, for many of the disadvantages and difficulties that are experienced in 15-pound children are obviated when operation is performed upon infants only 24 hours old. At this age the cleft is much smaller than it is a month or two later, for it widens relatively quickly so that an operation performed upon children a day or two old is much easier in every respect than when performed later. They bear operations and anesthetic remarkably well.

A point mentioned by Dr. Barbat is the fact that the tissues at this age are practically embryonic, very vascular and full of vitality; it must also be remembered that micro-organisms have not yet developed and that the tissues as well as the secretions of the mouth are practically sterile.

We have all had the experience of operating upon these young children for circumcision, etc., and know that their tissues heal with extraordinary rapidity.

I spent quite some time working with Mr. Lane at the Great Ormond Street Hospital and I saw him operate two or three of these cases almost daily. He operates them with remarkable skill and he repairs the cleft palate and hare lip at one sitting. As is well known, Lane's is a flap operation without lateral incisions. One of the important principles that must be observed in all of these operations is that there shall be no tension of the tissues because when this occurs failure is probable. A point that Lane brings out is the difficulty in closing the little space at the angle of the cleft at alveolus; this space is very difficult to close by suture and Lane has advised the employment of very small needles which he uses with his needle holder; they have a full curve one-third of an inch in diameter and one is able to suture this space in a manner not possible by any other means. Lane fills in this space by swinging in a piece of the tissue that is usually removed from the hare lip.

Another point is to keep the child, when crying, from moving its mouth, which interferes with healing. Lane uses the so-called undertaker's stitch which is introduced from within the mouth; passing through the face it is brought out at the point of union of the ala of the nostril and the upper lip; the needle is then passed through the tissues again from without inward almost through the same puncture; there is enough tissue held in the loop of the suture to prevent it from pulling out. The thread is then carried across the front of the gum and is re-introduced through the corresponding side from within outward and back again into the mouth in the same manner; the suture which now has a loop held at each ala of the nostril is then tied in front of the gum under the lip. It holds the lip tisues so that they cannot be moved and relieves the tension on the tissues so that healing is more apt to occur. The same result is accomplished by Dr. Sherman's plaster appliance.

The suture that I have found of value as far as cosmetic effect is concerned, is introduced as follows: In closing the hare lip, catgut sutures are re-introduced through the mucous membrane and are brought up to the cutaneous surface, but do not pass through the skin; they are re-introduced on either side of the lip and brought out on the side corresponding to the point at which it has been introduced; when this tissue is tied on the mucous side the tissues are firmly held and as they are catgut, they do not need to be removed, while being tension sutures no skin markings are left to disfigure the face.

The upper layers of epiderm are next united with a fine silk suture and a No. 16 needle such

as is used in blood vessel work; this suture is a continuous one and is only passed through the upper layers of the epiderm. Perfect approximation of the skin is obtained without any suture markings; this suture does not need to be removed, as it falls off with the desquamation of the skin in a few days.

Dr. G. Franklin Shiels: Two points I have noticed to be of some value in handling these operations: (1) to stop the motion of the face, as in crying, etc., after operation—the best way to do is to make an incision at the junction of the buccal and maxillary mucous membrane and loosen up the whole of the face tissues from the underlying bone, so that you can move them freely at the time of operation and have less post-operative strain and motion during healing; (2) in regard to keeping the child quiet, one-grain doses of chloral keep the child restful. Chloroform is the anesthetic of choice, and chloral after operation is a producer of quiescence.

Dr. Harry M. Sherman, closing discussion: This knife, which Dr. Barbat showed, is very nice, although a little large. I prefer the Politzer knife, which is a little smaller, curved, and designed to puncture a hole in the drum membrane. When a Politzer knife has been ground down a little and is smaller than it was originally, it is about the right size for splitting the soft palate and uvula.

I have avoided that gag of Mr. Lane's because of those needle points which cut through the gum and which must go close to the follicles of unerupted teeth. I quoted Goyder when I spoke in criticism of the Lane technic; he says it spoils the teeth if the flap is taken from the alveolar processes and outside of them. Teeth are becoming more and more important to us as we find how they are needed in mastication, and how on infected mouths are based a great many pathological processes which continue during life.

The anesthetic is ether. I have had casualties, fatalities, in children with chloroform, and I do not see any reason for anybody using it. Children take ether just as well. The ether is given by a catheter in the nose, through which is blown air, ether saturated. The anesthetist sits with one hand on the pulse and one foot going quietly on a little foot bellows, giving a little stream of air and ether. When you put that catheter into the nose, put it in a measured distance and stitch it to the septum. If you do not stitch it, it may drop out or slip in too far.

As regards position, there is a little shelf on the operating table which hangs down from the end. The child's head lies on that so that it is very easy to see the whole of the hard palate. The child is surrounded by black towels and the mouth is in high light. If white towels are used the mouth is in shadow and you cannot see into it as well. It was on a cleft palate child that I first got the idea of using a black environment for the operation field.

The suture material is horsehair, of course, and it is always used double. In that way you get a stronger thread and one that will hold better in the tissues.

Mr. Goyder says the Langenbeck operation is not practical in little children, and is a mistake. So far as the size of the child is concerned, the Langenbeck would do as well as the Lane, I think. As a matter of personal experience, I never found a child with so small a palate and so wide a cleft but what I could do the Langenbeck operation.

These children must not be kept in a part of the hospital where suppurative cases are going on; they must not be handled by nurses who are giving enemata, who are washing other children and dressing their wounds. They must be taken care of by people not handling sepsis. I have found it not a bad plan to take the child to the hospital for operation, then send it home to convalesce in the environment to which it was accustomed, and let the mother bring it to the office for dressings.

The question of infection is a very important one. Eastman last year called attention to the necessity for plenty of blood in the flap in order to get union. I have left the flap to the mercy of the anterior palatine artery and ascending pharyngeal artery, and they keep the flap well nourished so that union will occur.

Dr. Levison is right about the little space at the front end of the cleft. It is a difficult thing to close it, and if it is not well closed there may be a leak of fluids up into the nose. I have filled in a piece from the cheek, and it is very curious to see how, after that has been done, there is a vivid flap in a pallid environment, because the mucosa of the lip is a deeper red than that of the hard palate. I do not see how Mr. Lane closes this place with his technic and especially when the projecting intermaxillary bone is in the way.

Finally, the man doing cleft palate operations must make up his mind to a high average of disappointments. The tissue used is thin and delicate and in a potentially septic environment. Usually sutures hold well about four days, and then those at the junction of the soft and hard palates begin to give way and a hole forms. When this occurs one may re-anesthetise and put in fresh sutures, but they go, under these circumstances, into tissue that is edematous and sleasy, and rarely hold well. Really it is just as well to let the condition take its own course and be content with the amount of healing gained at that operation, even though it be small. If there has been no trimming of the cleft edges no tissue is lost and secondary sutures may succeed when the primary have failed. The healing that you finally get after disappointments is a reward of patient merit; and that which happily comes at the first operation is a distinct blessing, and it does come so, though not as otten as one would wish.

BOOK REVIEWS

Principles and Practice of Obstetrics. Second Edition. By Joseph B. DeLee, A. M., M. D., Professor of Obstetrics at the Northwestern University Medical School. Large octavo of 1087 pages, with 938 illustrations, 175 in colors. Cloth, $8.00 net; half Morocco, $9.50 net.

This large compend of obstetrics is profusely illustrated and systematically arranged to meet the needs of the busy general practitioner. The volume is attractive for undergraduates, but is too extensive for them to read thoroughly in the crowded curriculum of the modern medical school. The short bibliography at the end of each chapter will prove of some aid to men who desire to prepare themselves for a serious study of obstetrical problems, and will tend to lead them to the more complete references of the German texts.

A. B. S.

General Medicine. Edited by Frank Billings and J. H. Salisbury. Volume VI of Practical Medicine Series 1915. The Year Book Publishers, Chicago. 1915. Price $1.50.

This volume presents, among other things, an exceptionally valuable digest of practically all the important work of the year on gastro-intestinal subjects and well repays reading for this one part alone.

Especially well worked up are the sections on the chemical, microscopical and radiographic methods of gastric and intestinal analyses.

G. H. T.

Manual of Vital Function Testing Methods and Their Interpretation. By Wilfred M. Barton, M. D., Boston. Richard G. Badger, 1916. Price, $1.50.

Not long ago, following the rapid advances in our knowledge of pathology, it was the great effort

in diagnosis to approximate the anatomical condition present. In many cases it was found, however, that symptoms and signs do not correspond to morphological conditions, and further that what the patient as well as the doctor is really interested in is what his kidneys or other diseased organs will do and not what they may look like. For this reason, there has been in recent times a great deal or research on the subject of so-called functional tests. To a large extent the knowledge on this important subject has been locked up in special journals and inaccessible for general use. The present volume does a very useful service in making a very thorough collection of such data, The more important tests are fully described with comments as to their value, and full references are given even in cases where the tests are not described in full. As a handbook for ready reference the small volume will be found of great value. It is unnecessarily marred by a considerable number of typographical and other errors which will doubtless be deleted in the next edition. J. L. W.

The Medical Clinics of Chicago. Volume I, No. VI (May, 1916). Octavo of 229 pages, 22 illustrations. Philadelphia and London: W. B. Saunders Company, 1916. Published bi-monthly. Price per year: Paper, $8.00; cloth, $12.00.

Contents.

Clinic of Dr. Walter W. Hamburger: The Allen treatment of diabetes.

Clinic of Dr. Richard J. Tivnen: Relation of upper respiratory tract to metastatic infections.

Clinic of Dr. J. C. Friedman: Chronic pain in the right iliac fossa.

Clinic of Dr. Chas. S. Williamson: Hanot's disease. Biliary hypertrophic cirrhosis of the liver. Tumor of left kidney—subsequently operated upon. Operative findings. Abdominal tumor in the position of right kidney and retroperitoneal, but not connected with the kidney.

Clinic of Dr. Joseph Zeisler: Presentation of case of mycosis fungoides.

Clinic of Dr. Ralph C. Hamill: Traumatic neurosis.

Clinic of Dr. Robert B. Preble: Acute nephritis due to tonsillitis, with subsequent development of pneumonia. Case of trichinosis; trichinae demonstrated in spinal fluid.

Clinic of Dr. Frederick Tice: Pleurisy with effusion. Indications for thoracentesis and detail. Acute pneumonia added to pulmonary tuberculosis. Acute pneumonic phthisis.

Clinic of Dr. Chas. L. Mix: Presentation of case of hookworm disease, with special reference to treatment. Hypernephroma of left kidney; Special consideration of hematuria.

Clinic of Dr. Isaac A. Abt: Rachitis.

Pellagra. By George M. Niles, M. D., Gastro-enterologist to the Georgia Baptist Hospital, Wesley Memorial Hospital and Atlantic Hospital, Atlanta, Georgia. Octavo of 261 pages, illustrated. Philadelphia and London: W. B. Saunders Company, 1916. Cloth, $3.00 net.

Once upon a time a giant was walking abroad with his little daughter. She suddenly stopped, and stooping, picked up a tiny peasant who was ploughing with his team of oxen. As she held the team in the palm of her hand she exclaimed: "What a wonderful plaything, oh my papa!"

Her father gathered up the team carefully and laid it back very tenderly in the furrow, chidingly saying, "The peasant is no plaything, oh, my daughter!"

If this gigantic social system of ours is to be properly maintained the farm laborer is decidedly no plaything.

As a rule the human being does only as much work as he is impelled to by his necessities or immediate desires, and if these are urgent enough, and he has the health to satisfy them, wealth accrues to the community. If, however, sickness intervenes, it robs the laborer both of his ability to work, and of the wherewithal to pay for individual medical attention. Futhermore there are diseases of such a general nature that their causes can only be dealt with adequately by the state or the nation. Pellagra and hookworm are of this nature; they involve principally the laboring population over wide stretches of country, and they incapaciate the sufferers for any effective effort. Pellagra is shown to depend on an intestinal intoxication occasioned by the ingestion of spoiled corn. Niles' treatise on pellagra shows how persistently spoiled corn will creep into the dietary when it is monetarily advantageous to the seller to have it do so, and such monetary urgence is seldom lacking.

This book is written in a style easily comprehensible by men not having the special education of a physician, and is valuable because of the clear emphatic insistance on the hygienic rules which must be obeyed if this disease, economically so important, shall be stamped out. D. W. M.

Treatise on Fractures. By John B. Roberts, A. M., M. D., F. A. C. S. Professor of Surgery in the Philadelphia Polyclinic and College for Graduates in Medicine, and James A. Kelly, A. M., M. D. Attending Surgeon to St. Joseph, St. Mary's and St. Timothy's Hospitals, with 677 pages and 909 illustrations, including radiograms, drawings and photographs. Cloth $6.00. J. B. Lippincott Co., Philadelphia and London. 1916.

It is always a pleasure to find a new book that is really quite up to date. In this instance the authors have presented the treatment of fractures as is followed by the best workers today. Their volume is not overburdened with descriptions of every method of handling fractures ever published. The methods used today, giving the best results, are those described.

The first 116 pages are devoted to a discussion of fractures in general, including the operative treatment. This presents the subject of fractures in a clear-cut manner and places the operative treatment where it belongs, in a conservative position, to be attempted by the skilled operator and under most rigid asepsis. The tables of frequency are of real interest. It is gratifying to find the term "open fracture" used instead of the old term "compound" which should be relegated to the past. Also due recognition is given sprain fractures, emphasizing the fact that many so called sprains are passed up as such when they are really fractures of tips of bones where ligaments are attached.

The subject of epiphysis is well handled and epiphyseal separation properly emphasized.

In presenting the individual fractures, the authors begin with the cranium and progress to the phalanges of the feet, including the sesamoid bones, birth and gunshot fractures. Each fracture is discussed in order from anatomy, etiology, variety, symptomatology, prognosis, treatment to results. In discussing fractures of the skull the authors digress somewhat from the limited subject of fractured bone and properly emphasize the real important condition of injury to the contents of the skull which is the pathology needing treatment.

In discussing the treatment of some fractures, dressings are mentioned in a fairly general way, leaving the details to the surgeon to work out in the individual case, rightly assuming each fracture is a particular problem, to be treated as such and not to be bound down to hard and fast rules.

The illustrations are very abundant and fairly clear for the most part. Typographical errors are very few.

As a whole the authors are to be commended for presenting the subject of fractures in a form that has a definite place in the bulk of medical literature. E. J. B.

Harvey's Views on the Use of the Circulation of the Blood. John G. Curtis, M. D., LL. D. Published by Columbia University Press, New York, 1915. Price $1.50 net.

In many ways the book written by John G. Curtis on "Harvey's Views on the Use of the Circulation of the Blood" is remarkable. It is worth reading if only for the copious and well chosen translations from Harvey's writings, for Harvey wrote in Latin, not in English.

Previous to Harvey many shrewd observations had been made on the circulation, and even a complete demonstration of the lesser or pulmonic circulation by Servetus, but no one had set fôrth both the lesser and the greater circulation as Harvey did. He made the subject so clear, and supported his statements with so many cogent observations and experiments, that no unprejudiced reader of his work can refrain from giving him credit for a full and complete discovery.

There is much more in the book, however, than the mere circulation of the blood as it is understood now-a-days. There was then the question of innate heat, which is now entirely forgotten.

Where did the heat of the body come from? The food might be cold, and so might be the surrounding atmosphere, and yet the blood was hot. The heart was looked upon as the source of this heat, and it was assumed to be so ardent that its emanations had to be cooled down by the air entering the lungs. This heat, it was assumed, was imparted by the heart to the blood, and by it was carried to all parts of the body. Harvey differed from this Galenical view, but, of course, could not depart from the idea of innate heat. He had to assume as his predecessors had done, that this heat was innatus, or born in and with the being; it was inseparable with this being, began at its birth and ended with its death. Harvey saw that this heat could not be generated by the hollow muscular organ, the heart, and he guessed it to be produced in the blood itself, in the cavities of the heart. This, he was careful to say, he did not assert positively but only advanced as a thesis. He then added that "Whatever might be brought forward to the contrary by learned and upright men without scurrilous language, clamor or contumely I shall be glad to know, and whoever shall do that will earn my gratitude." It was in this open minded spirit that Harvey, in his seventy-first year, wrote to his able antagonist, Jean Riolan, dean of the Faculty of Medicine of Paris. One may imagine what pleasure and intelligence would have lit up his thoughtful eyes and fine features if he could have received, even at that advanced age, a clear demonstration on the subject of heat, such as could be given by a well appointed modern physicist.

A delightful portrait of the great Englishman is included in the book. D. W. M.

American Public Health Protection. By Henry Bixby Hemenway. Indianapolis: Bobbs-Merrill Co. Publishers. 1916.

This little work consists of a description, available alike to the physician and to the layman, of the new public health, that is to say, of public health measures inspired and wrought out from scientific principles as constrasted with the political public health of a generation ago—the hit or miss sanitary measures applied by the political health officer.

The work takes us through the urgent needs of the modern community for scientific public health administration: it gives a good description not only of the local administration but of those national and state health agencies of which few physicians, and for greater reason, fewer laymen, have any conception of.

The basic sanitary campaigns from which many deductions are drawn are here, as in other works, the great work of Gorgas on the Isthmus of Panama, and the work of Surgeon General Blue in the plague eradicative campaign of San Francisco and California.

A few quotations are apropos:

"It is the opinion of most sanitarians that several of those national bureaus should be combined into one department under the leadership of a member of the cabinet, who should be, not a physician, but a sanitarian of broad experience, and with constructive ability." "Its establishment is opposed by certain commercial cliques, who have all found that their business has been hampered by the light of publicity. The opponents are especially the patent medicine manufacturers and 'commercial doctors,' whose practice depends upon misleading the people. Their principal supporter in congress has been a member of the Christian Science organization. One of the strong evidences for the need of such a department is found in the hampering influences of the Secretary of the Treasury when the Marine Hospital and Public Health Bureau were first attempting to cope with the bubonic plague in California. That hampering influence was then instigated by the commercial influences of San Francisco. It seems strange, therefore, that the people of that state who have suffered so severely from this misguided commercial influence, should permit their senator to continue his opposition to an honest and scientific administration of the work of preserving the public health."

"Since this movement has taken more definite form, the Public Health Service has been making rapid developments. It is the contention of the friends of that service that it should be made independent, and that the other agencies should be added to its force, without making other special changes, simply raising the surgeon general of that service to the ranks of a cabinet officer."

The work is written in a fluent style as shown by the above quotations and can easily be read in the course of an evening, and the time thus spent will be amply repaid by the acquisition of a number of new thoughts or rather felicitous expressions of old ideas which can be used in the course of public health work. G. M. C.

Pulmonary Tuberculosis. By Maurice Fishberg, M. D., Clinical Professor of Tuberculosis, University and Bellevue Hospital Medical College; Attending Physician, Montefiore Home and Hospital for Chronic Diseases, New York. Octavo, 639 pages, with 91 engravings and 18 plates. Cloth, $5.00, net. Lea & Febiger, Publishers, Philadelphia and New York, 1916.

This book as indicated in the preface, is intended to supply the general practitioner with information concerning the etiology, diagnosis, prognosis and treatment. It contains 620 pages of text.

Of special interest are the chapters on Tuberculous infection and epidemiology, preparing the reader, as they do, for the significant statements made under the heading of Phthisiogenesis. To those who have not closely followed the investigations of Romer, Much and others, the author's conceptions of phthisiogenesis will seem almost revolutionary. The distinction between tuberculous infection and phthisis in the adult is clearly drawn. Basing his argument on the theory that phthisis is a late manifestation of tuberculosis acquired during childhood, a theory now generally admitted, the author presents the view formulated by Romer that phthisis is really a manifestation of immunity against tuberculosis, which has been acquired by the infection in childhood. Attention is called to the recent experimental proof of immunity in animals, which are abundant, and which have entirely changed our conception of tuberculous infection, showing as they do, the difficulty and even impossibility of reinfection of the infected animal. The author freely quotes Romer, Hamburger and other investigators in this field whose epoch-making work

have prepared us for the almost revolutionary fact that exogenic reinfection in the adult probably seldom if ever occurs. The author in support of this theory calls attention to the fact that attendants and inmates of hospitals for consumptives show no higher mortality nor morbidity from tuberculosis than those in other occupations; that marital phthisis, in spite of intimate and prolonged contact is very rare; that clinical proofs, exist of immunity acquired by tuberculous infection.

Admitting the extreme rarity of exogenic reinfection the inefficacy of much of the activity in modern efforts at prophylaxis come prominently to view. In the effort to protect the adult against reinfection from without the child possessing no hereditary immunity has been too largely overlooked. This would indicate that our tuberculosis campaign will have to be in large measure reorganized and carried on along somewhat different lines of activity. The reader is left in doubt as to the method by which tuberculosis infection originally takes place, although the author rather indicates that because of the predilection of childhood to infection the portals of entry of tubercle bacilli may be various. The numerous investigators along the lines of theories of infection are freely quoted and particularly is that very excellent work of Brauer, Schroeder and Blumenfeld's Handbuch der Tuberkulose frequently referred to.

The chapters devoted to symtomatology and physical signs are quite full and complete. The importance of Pottenger's interpretation of spasm and degeneration of thoracic muscles is emphasized and its great value as an aid to early diagnosis admitted. The technic for eliciting various physical signs has been elaborated with great detail and will certainly be of great value to the general practitioner in making more thorough examinations. There is much that is interesting in what the author has to say on auscultation of the chest. Authorities are freely quoted and it is here that in his description of rough or granular breathing, a particularly important early auscultatory sign, it is unfortunate that in his mention of the many writers who have called attention to the sign, he has neglected to give credit to Turban who first brought it out.

The chapter on skiagraphy is conservative, emphasizing as it does, the limitations of this aid in diagnosis. There is not an uninteresting chapter in the book and space forbids a careful review of those devoted to the clinical forms of phthisis, its complications, prognosis, etc.

As would be expected from the author's view of phthisiogenesis, the space devoted to prophylaxis is very significant and is necessarily viewed from the standpoint of prophylaxis in children and prophylaxis in the adult.

The chapters devoted to treatment are on the whole disappointing. Differences regarding the symptomatic treatment of tuberculosis and its complications one expects in different individuals. In a work however, where individualism in treatment is emphasized to the extent that it is in Dr. Fishberg's book one is disappointed at seeing the pessimistic attitude of the author toward institutional treatment. There is no place where more thorough individualism can be applied than in well conducted sanatoria and in Dr. Fishberg's criticism, that in institutions patients are treated too much en masse, it would seem that he has been unfortunate in the sanatoria he has investigated. His criticism may largely hold in municipal, state and philanthropic institutions, but it certainly does not prevail in well conducted private institutions under good scientific control. The reviewer decidedly dissents from the author in his statement that we are apt to lose that objectivity in our attitude toward these patients by seeing them too frequently. The reverse is true.

However, this chapter on institutional treatment will certainly afford cause for reflection on the part of those enthusiasts who give to the sanatorium altogether too important a place as a factor in the tuberculosis campaign. It is certainly the most expensive weapon in the campaign, probably the least effective.

It is to be regretted that the author handles the subject of specific treatment in tuberculosis in a flippant manner, utterly out of keeping with the general excellence of the book. Of course one can scarcely expect other results where directions for the use of tuberculin are as loosely given and where the author practically recommends the use of serial dilutions put up by pharmaceutical houses. This particular chapter contains many misstatements of facts. For instance, the author states that tuberculin is given at present by most who use this agent for its psychic effects. In reading this chapter one can not help thinking of the statement of Sahli, who with his wealth of clinical experience and his keen analytical mind, stated that "while blind enthusiasm for tuberculin treatment can hardly be laid to my charge, I honestly believe that it is the best weapon of modern times in the fight against tuberculosis."

The chapter on artificial pneumothorax is well written without boring the reader with too much of the historical. His attitude toward this procedure is conservative in marked and relieving contrast to the tendency altogether too prevalent nowadays of compressing all cases, regardless of whether they are unilateral or not, where the credulity of the patient will admit of such treatment. The author states that hardly five per cent. of cases are suitable for pneumothorax treatment. These figures are probably accurate.

Climatic treatment deserves comment. The attitude of the author is sane and this chapter should be read by all who have access to the book for we still find men, happily less frequently, in all communities, who worship this fetish, ignoring the more important factors in treatment.

The book is well printed; the subjects are well arranged and the text is profusely illustrated. The book should find a useful place in the library of every practitioner. G. H. E.

WARNING.

We are advised that a very clever swindle is being worked by a young man calling on physicians in various sections of the county. He is fraudulently soliciting orders and collecting money for subscriptions to medical journals, and for medical books published by various firms. He usually represents himself as a student, working his way through college, and trying to get a number of votes to help him win a certain contest. He sometimes uses the names of L. D. Grant, H. E. Peters, R. A. Douglas, and F. C. Schneider, and he usually gives a receipt bearing the heading of some society, or association, such as United Students' Aid Society, the Alumni Educational League, the American Association for Education, etc.

The description given of this swindler is: Young man of the Jewish type, rather slender, with very dark hair combed straight back, and shows his teeth plainly when talking.

The whole scheme is a fraud. The societies mentioned do not exist. The idea is to collect money by offering special discounts and prices on medical books and journals, and skip with the money.

This young man does not represent W. B. Saunders Company, whose name he frequently uses. He is a fraudulent subscription agent, and physicians generally should be on the lookout for him.

STATE DESTROYS MILLION POUNDS OF FOOD.

Nearly a million pounds of foodstufis, unfit for human consumption, have been condemned and destroyed by the California State Board of Health during the past four months. Some of these products were decayed, others were infested with

worms; all were putrid and unfit for eating. Professor E. J. Lea, director of the Board's Bureau of Foods and Drugs, states that these foodstuffs which have been destroyed consist of 437 tons of condiments, chiefly catsup made from spoiled tomatoes, nearly seven tons of decomposed eggs, six tons of fruits, five tons of poultry and eight tons of miscellaneous food supplies.

The destruction of the catsup alone has undoubtedly prevented many cases of illness, and unscrupulous dealers are now unable to procure those foodstuffs that are unfit for human consumption. Many retailers have been buying such products at very low prices, and in turn they have been selling to the general public at low rates. This action of the Board protects the honest dealer who is endeavoring to supply the public with wholesome foods at fair values, from the competition of the dealer who is able to sell products at low rates because they are spoiled or adulterated.

Through the removal of these five hundred tons of foodstuffs from the markets of the state, not only has the health of the public been safeguarded, but unscrupulous dealers have been taught that such foods can not be sold to citizens of California.

CARELESS AUTOMOBILISTS.

Regardless of the enormous amounts of money expended by the railroads of California in furnishing protection at grade crossings and the earnest effort to educate the public, drivers of vehicles and pedestrians insist upon creating unnecessary danger and taking foolhardy chances. This was brought out in the State Railroad Commission's recent state wide investigation of the grade crossing problem when the carriers gave the Commission a list of accidents that are all too common. From the list was excluded the joy-rider and the intoxicated driver.

Here are a few samples chosen at random:

December 29, 1915, 2:45 a. m. Driver of automobile disregarded train and its warning and ringing crossing bell, and drove into side of locomotive. At the moment of accident, driver of machine was engaged in filling and lighting his pipe. One person was killed.

August 17, 1915, during daylight hours. Automobile driver with several passengers ignored all warnings, took no precautions whatsoever and at high speed drove automobile into side of train. Four persons killed and two injured. The automobile was in jitney service.

June 2, 1915 11:45 a. m. Driver of an auto truck descending a three per cent. grade admitted seeing the train while he was 1-4 mile from crossing. There were several other vehicles standing at the crossing waiting for train to pass, but the driver of this auto truck drove around those vehicles on to track in front of train and then stalled his motor. Resulted in property damage of $5000.

April 17, 1915, 5:20 p. m. An automobile occupied by three ladies ignored train and its warning and the violent whistling of the locomotive, drove around a number of other standing vehicles up on to track in front of train and was struck. At this crossing there is a clear view of approaching trains for a distance of two miles. Three persons injured and automobile completely demolished.

March 5, 1915, 7:24 p. m. Automobile ignored train and its warning, ignored crossing watchman's warning, passed around standing street car and teams which were waiting for train to pass, and ran squarely into side of railroad train. Occupant of this automobile had made a deal to sell the machine in another city and ignoring all danger, was rushing to keep his engagement.

The accident fortunately resulted only in property damage to the automobile.

POSTAL SAVINGS.

Larger postal savings deposits will now be accepted at the postoffice. This is made possible by an important amendment to the Postal Savings Act just approved by President Wilson. A postal savings depositor may now have an account amounting to $1,000 upon which interest will be paid. Formerly $500 was the maximum amount he could have to his credit. This enlargement of postal savings facilities will be very gratifying to thousands of depositors who have already reached the old $500 limit and are anxious to entrust more of their savings to Uncle Sam. Another feature of the amendment that will avoid further embarrassment to the public and to postal officials is the doing away with the limit on the amount that could be accepted from a depositor monthly. Under the old law only $100 could be deposited in a calendar month. The amendment abolishes this restriction. While the Postal Savings System has already proved a signal success, as is shown by the fact that more than half a million depositors have over eighty million dollars standing to their credit, still it has fallen short of meeting the full demands of the public because of the restrictions which have now been eliminated. Postmaster-General Burleson and Third Assistant Postmaster-General Dockery have been tireless in their efforts to secure a modification of the limitations, and the new liberalizing legislation is particularly gratifying to them.

SOCIAL INSURANCE.

The question of sickness insurance in this state opens up such a large field for study, as to make it imperative for us all to cooperate, in so far as possible in an intensive investigation of the problems involved. It is very important that your committee, representing as it does, the medical profession of the state, should post itself as to all phases of the study, and not concern itself alone with the attitude of the profession toward any scheme for sickness insurance.

It is with this view in mind that I shall attempt to furnish your committee from time to time with what information we are able to gather here in San Francisco. A few months ago, a group of us, interested in Social Insurance, at the suggestion of a member of the Social Insurance Commission of the State of California, decided to hold weekly evening meetings, so that we could take up and discuss these matters.

The Commonwealth Club of California has likewise organized a study committee. It meets every Friday afternoon from 4 to 6 P. M. On it, we find employers, employees, staunch representatives of labor, insurance men, statisticians, physicians. They have mapped out a rather ambitious program for study.

1. Present conditions in California.
   - (a.) Scope not covered by existing laws.
   - (b.) Rate of sickness and non-industrial accidents.
   - (c.) Financial loss.
   - (d.) What employers do.
   - (e.) What employees do.
   - (f.) What the charities do.
2. Health Insurance for California,
   - (a.) Existing laws—all countries.
   - (b.) Proposed laws.
   - (c.) Applicability to California conditions.
   - (d.) To whom applicable.
3. Health Insurance and the State.
   - (a.) Constitutionality.
   - (b.) Policy—economic and social.
   - (c.) Relation of Compensation laws to Health Insurance.
4. Relation of Medical Profession to Health Insurance.
5. Attitude of Employers to Health Insurance.
6. Attitude of Employees to Health Insurance.

7. Attitude of Independent Workers and Unemployed.
8. Attitude of Present Insurance Carriers.
9. Recommendations.

Many interesting questions have been brought out at these meetings.

(1.) As to the relation of the Medical Profession to health insurance. Here the article published in the N. Y. Med. J. Feby. 1916, and reprinted in our journal, May 1916, served as the text. (a) The Medical Profession recognize the need for sickness insurance. (b) There is bound to be opposition to it, unless its administration is such as to afford the Physician proper remuneration for his work. (c) Industrial Accident Insurance has possibly increased the doctor's incomes, as all bills are collectible, even though on a schedule less than the ordinary fee. (d) It is possible that under Sickness Insurance laws, there would be more demand for medical services, and even admitting that re-adjustments in the profession might have to follow, there would be work for everybody. (e) The question as to choice of physicians is of course of great importance, and offers opportunity for a great diversity of opinions.

(2.) Statistics so far secured, show that the average income of selected wage earners is not over $75 per month, perhaps nearer $65. (b) For a family of five, $30 would be the average minimum required for food. (c) For such a family the average minimum rent would be $12 to $15. (d) It is therefore clear that there is no margin for substantial saving, and any family in which the wage earner has a period of sickness of several months is doomed to financial wreck. (e) Compulsory Insurance for those with incomes under $750.(?) $1200 (?) necessary.

(3.) In spite of above, organized labor objects to compulsory sickness insurance. (a) Because it would lead to examination of employees, with possibly the refusal of employment to those not quite up to physical standards. (b) Because it is class legislation. (c) Because it would lead to invasion of homes of employees. (d) Because it is un-American; deprives men of right of freedom; of liberty of personal action. (e). Because the only way to help the workmen is to provide a minimum wage, shorter hours, sanitary living and working conditions.

We have thus outlined a bit of the work before us. The following articles and books are recommended for study.

Social Insurance. I. M. Rubinow.

Social Insurance. Henry R. Seager.

Medical Benefit in Germany and Denmark. I. G. Gibbon.

American Labor Legislation Review, vol. 3, 1913, p. 172.

American Labor Legislation Review, vol. 6. 1915, p. 1-37.

Health Insurance—U. S. Public Health Bulletin, No. 76. B. S. Warren.

Social Insurance in Germany. W. H. Dawson.

Standards of Sickness Insurance. Journal of Political Economy, vol. 23, Nos. 3, 4 and 5, 1915. I. M. Rubinow.

Better Doctoring for Less Money. The American Magazine. March and April, 1916. Richard C. Cabot.

Labor vs. Its Barnacles. Samuel Gompers, American Federationist, April, 1916.

Social Insurance. Calif. State Med. Journal, May 1916, p. 173.

British National Insurance Act, 1911. Bulletin U. S. Bureau of Labor, No. 102.

Sickness and Accident Insurance Law of Switzerland. Bulletin U. S. Bureau of Labor, No. 103.

Medical Examination of Employees. Transactions of the 10th Annual meeting, (1914, p. 33) Nat. Ass'n Study and Prevention Tuberculosis.

NEW SECTIONS.

Acting upon the request of the House of Delegates, the Council has created a section of Obstetrics and Gynecology, with Dr. E. N. Ewer as chairman, to serve until the annual meeting of 1917, and a section of Neurology and Psychiatry, with Dr. A. W. Hoisholt chairman and Dr. J. Ross Moore secretary. Dr. Ewer will appoint the temporary secretary of the Section on Obstetrics upon his return from the East.

ARMY MEDICAL CORPS EXAMINATIONS.

The Surgeon General of the Army announces that preliminary examinations for the appointment of First Lieutenants in the Army Medical Corps will be held on July 17, 1916 and August 14, 1916, at points to be hereafter designated.

Full information concerning these examinations can be procured upon application to the "Surgeon General, U. S. Army, Washington, D. C." The essential requirements to securing an invitation are that the applicant shall be a citizen of the United States, shall be between twenty-two and thirty years of age, a graduate of a medical school legally authorized to confer the degree of Doctor of Medicine, shall be of good moral character and habits, and shall have had at least one year's hospital training as an interne, after graduation. The examinations will be held simultaneously throughout the country at points where boards can be convened. Due consideration will be given to localities from which applications are received in order to lessen the traveling expenses of applicants as much as possible.

In order to perfect all necessary arrangements for the examination, applications must be completed and in possession of the Adjutant General, at least three weeks before the date of examination. Early attention is therefore enjoined upon all intending applicants. There will be more than one hundred vacancies to be filled after July 1st, when the bill for the reorganization of the Army becomes a law.

WAR DEPARTMENT,
Office of the Surgeon General,
Washington.

May 17, 1916.

To the Editor,
California State Journal of Medicine,
San Francisco, Cal.

Sir:

Owing to the withdrawal of troops from their regular stations for duty on the Mexican border, the War Department has been compelled to abandon the camps of instruction for officers of the Medical Reserve Corps, that were to be held during the coming summer.

I am instructed by the Surgeon General to send you the enclosed draft of a notice regarding examinations for the Army Medical Corps, and to state that he will be pleased to have it appear in the next issue of your journal, or so much of it as you may find space for. The regulations of this department prohibit the publication of such matter as an advertisement, hence the request that it be published as a "notice."

Very respectfully,

ROBT. E. NOBB,
Major, Medical Corps, U. S. Army.

MEDICINE AND DENTISTRY.

First University Dental School in New York for Columbia.

Realizing the importance of the teeth and mouth infections to systemic disease, the Faculty of the College of Physicians and Surgeons have unanimously voted in favor of the establishment of a dental department, to be connected with the medical school. A committee of prominent dentists of the city have presented plans to the Medical Faculty which have been approved.

The school of dentistry will be closely associated with the medical school and the admission requirements will be the same as the medical. The course will be four years, the first two years the same as those in medicine, thus giving the dental student a thorough knowledge of the fundamental sciences necessary to the practice of a specialty of medicine. At the end of the second year the dental student will give all his time to the study of dental subjects; namely, operative dentistry, prosthetic dentistry, oral surgery and oral pathology, orthodontia, etc., and the more technical part of the work required for the well trained dental surgeon. This new school will be the first university dental school in New York City and the second in the State. It will give the first four-year course of dentistry eevr given in the Empire State.
of dentistry ever given in the Empire State.

HEALTH EFFICIENCY.

Statement showing total number of physical examinations made by Drs. Tebbe and Tebbe, for the Weed Lumber Company, to date, and list of abnormalities found. Percentages based on total number examined.

	No.		%
Total number examined	1,495		
Total having some physical abnormality	694		46.4
Eyes:			
Both subnormal	43		2.88
No vision, one eye	20		1.34
Poor vision, one eye	34		2.27
Poor vision, both eyes	33		2.21
Total		130	8.70
Ears:			
Both slightly impaired	42		2.81
No hearing, one ear	7		.47
Poor hearing, one ear	23		1.54
Poor hearing, both ears	35		2.34
Total		107	7.16
Hernia:			
Patulous rings,			
Single	141		9.43
Double	100		6.69
Inguinal Rings Giving,			
Cough Impulse,			
Single	98		6.56
Double	85		5.69
Beginning,			
Single	39		2.61
Double	15		1.00
Complete,			
Single	62		4.15
Double	13		.89
Total		553	37.00
Varicocele		60	4.00
Hydrocele		9	.60

THE SAMUEL D. GROSS PRIZE, FIFTEEN HUNDRED DOLLARS.

Essays Will Be Received in Competition for the Prize Until January 1st, 1920.

The conditions annexed by the testator are that the prize "shall be awarded every five years to the writer of the best original essay, not exceeding one hundred and fifty printed pages, octavo, in length, illustrative of some subject in Surgical Pathology or Surgical Practice, founded upon original investigations, the candidates for the prize to be American citizens."

It is expressly stipulated that the competitor who receives the prize, shall publish his essay in book form, and that he shall deposit one copy of the work in the Samuel D. Gross Library of the Philadelphia Academy of Surgery, and that on the title page, it shall be stated that to the essay was awarded the Samuel D. Gross Prize of the Philadelphia Academy of Surgery.

The essays, which must be written by a single author in the English language, should be sent to the "Trustees of the Samuel D. Gross Prize of the Philadelphia Academy of Surgery, care of the College of Physicians, 19 S. 22nd St., Philadelphia," on or before January 1, 1920.

Each essay must be typewritten, distinguished by a motto, and accompanied by a sealed envelope bearing the same motto, containing the name and address of the writer. No envelope will be opened except that which accompanies the successful essay.

The Committee will return the unsuccessful essays if reclaimed by their respective writers, or their agents, within one year.

The Committee reserves the right to make no award if the essays submitted are not considered worthy of the prize.

WILLIAM J. TAYLOR, M. D.,
JOHN H. JOPSON, M. D.,
EDWARD B. HODGE, M. D.
Trustees.

Philadelphia, March 1st, 1916.

DEATHS.

Coxhead, T. C., Oakland.
Hollister, John Chamberlain, Pasadena.
Elliott, Edw. White, Turlock.
Ulrich, Edw. John, San Jose.
Schacht, B. H., West Point.
Lee, William Ross, Los Angeles.

NEW MEMBERS.

Silliman, John Calvin, Palo Alto.
Brownell, E. E., San Francisco.
Galbraiths, Francis B., San Francisco.
Macdonald, G. Childs, San Francisco.
Curtiss, Charles L., Redlands, Cal.
Burnham, Melvin Paige, San Francisco.
Chancellor, Philip S., Santa Barbara.
Cunnane, Philip John, Santa Barbara.
Huntley, A. C., Cloverdale.
Edgerton, Ambrose E., Stockton.
Griffin, Alonzo P., Tracy.
Todd, E. B., Lodi.
Nutting, Chas. Wilber, Jr., Etna Mills.
Doran, Alexander Vincent, Vallejo.
Bond, Fred. T., Vallejo.
Moodie, Alexander Russel, Redwood City.
Lynch, Wm. Carston, Belmont.
Wintermute, Charles Ellsworth, Saratoga.
Korts, Benjamin Frederick, Oxnard.
Lorimor, John Henry Dow, Hughson.
Armistead, Howell V., Newman.